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14 A history of attitudes and persuasion research

Pablo Briñol and Richard E. Petty

For the most part, the history of the field of attitudes and persuasion parallels the history of social psychology itself. There are at least two reasons for this. First, the attitude concept was a central and dominant one in social psychology from its inception. Second, because the concept of attitudes was so fundamental (basic) to so many social psychological phenomena, theories regarding attitudes and their formation and change have served as the building blocks for numerous other topics in the field ranging from prejudice to relationships. Although the absolute hegemony of this topic has risen and fallen over time in a cyclic way, as we will document in this chapter, in every decade over the past 100 years there has been at least one core idea or theory that has not only influenced researchers of attitudes, but social psychologists more generally.

We present the history of attitudes as the history of the key schools, people, topics and ideas that have permeated the field, with a focus on those contributing to basic research and theory within social psychology. Thus, we do not cover the linked developments in the numerous areas of application of basic attitudes research such as in the domains of prejudice, consumer, health, and political psychology, and many others. We begin by providing a general overview of the roots of the attitude concept itself. Next, we describe the work on attitudes and persuasion within broad traditions located at particularly influential universities. We cover core ideas regarding attitude measurement, attitude–behavior relationships, and especially attitude change as they were developed in the places where a group of key researchers concentrated their efforts, including Yale, Stanford, Illinois and Ohio State. In the second part of the chapter, we more briefly describe additional ideas regarding each of these major topics presented in chronological order so that it is easier to see how researchers have built on related contributions. This also allows us an opportunity to present some important ideas that were not originated in the four main centers of attitude research.

Introductory overview

Attitude: Definition, and beginning of the concept

Attitudes refer to general evaluations individuals have regarding people (including oneself), groups, places, objects, and issues. Attitudes were originally defined as a readiness to respond to the world around us. Thus, the term "attitude" was used to refer to the posture of one's body (Galton, 1884), and to expressive motor behaviors (e.g., a scowling face was said to indicate a hostile attitude; Darwin, 1965). Today we still ask for people's *position* or *stance* on an issue, though the meaning refers to an evaluative rather than a physical orientation (see Fleming, 1967, for a history of the use of the attitude concept). Early in the history of social psychology, attitudes were said to be the single most indispensable concept in the field (Allport, 1935), and they have remained the bedrock of the discipline as well as a pervasive concept throughout the social sciences.

Gordon Allport (1935), a founder of social psychology, traces the modern study of attitudes to 1888, when the German physicist L. Lange (an assistant of Wilhelm Wundt) discovered that a person who was instructed to concentrate on being ready to press a key at the onset of a stimulus responded more rapidly to the stimulus presentation than a person who was instructed to concentrate on the incoming stimulus itself. Lange called this anticipatory or preparatory phenomenon a *task-attitude*. Today, the invocation of an attitude (like or dislike) helps people prepare to respond to the social world by influencing what they attend to in the environment and what is approached or avoided.

The study of attitudes also links to early work on individual differences since the attitude concept was often chosen to name and explain a consistency in an individual's behavior across a variety of situations (as the term "personality" is used today; see Kiesler, Collins, & Miller, 1969). Although the concept of attitude *per se* was seldom used by classical Freudians, the influential work on the authoritarian personality (e.g., Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950) and ego-defensiveness (e.g., Katz, Sarnoff, & McClintock, 1956) represent an application of psychodynamic concepts in the analysis of attitudes toward minority groups.

Another influential early use of the attitude concept came from the sociologists Thomas and Znaniecki (1918) in their important book, *The Polish Peasant in Europe and America*. According to their view, social psychology is the scientific study of attitudes, with attitudes being the most essential concept needed to understand social change. Attitudes were defined with words referring to conscious experience, and their primary function was to explain individual differences in reaction to socially significant objects such as outgroup persons, legislation, and institutions (for a similar notion see Murphy,

Two other important lines of research were conducted in the 1930s before the US entered the Second World War. First, although not directly dealing with attitude change, a classic set of studies on interpersonal influence were conducted by Muzafer Sherif (1935), a student of Gardner Murphy at Columbia University, on group norms under ambiguous situations. Sherif's dissertation studies on the "autokinetic effect" showed how people look to the opinions of others in order to gather information under uncertainty. The research involved having students estimate the movement of a small dot of light in an otherwise dark room. People were influenced by the estimates of others in their group and this group norm persisted even when people returned to the lab a week later. This work, along with the subsequent studies of Solomon Asch (1951), another Murphy student, showed that people were influenced to give very inaccurate assessments of distance and size when other people first expressed these incorrect views. The influence of social consensus on attitudes was later re-examined by Leon Festinger and others.

Second, the research on group norms by Newcomb (1943), yet another student of Murphy's, also showed the power of others to shape our likes and dislikes. Newcomb moved in the late 1930s to the newly established Bennington College, an undergraduate school for women, and he examined the influence of social norms in that environment in changing the students' attitudes. In essence, Newcomb showed that the students became more liberal over time as they spent more time in the liberal local communities and campuses. The interest in the power of group norms to influence us has continued through the years (e.g., Visser & Mirabile, 2004).

After reaching some consensus on the importance of attitudes and how they could be measured, the field turned to the study of attitude change with great gusto in the 1950s. Although isolated studies of social influence certainly occurred earlier as just noted, the pioneering studies of Carl Hovland and his group at Yale (see McGuire, 1996) identified key variables and paradigms that are still in use today. We describe the evolution of core ideas regarding attitude change in the next sections beginning with the Yale group. In the first part of the chapter, we organize our review according to the main universities in which key ideas were developed. We also highlight some key individuals who were most prominent in the development of these core ideas.

As noted earlier, the first ideas about persuasion were guided by relatively simple assumptions in which single variables (e.g., emotion, source credibility) were thought to produce effects by single processes (see Petty, 1997; Petty & Briñol, 2008). As data accumulated, however, researchers began to recognize that any one variable did not always have the same effect on persuasion (e.g., sometimes positive emotions could decrease rather than increase persuasion), and each variable could affect attitudes by more than one process. Furthermore, a puzzle was that sometimes attitude changes tended to be relatively durable and impactful (e.g., guiding behavior), but sometimes changes were rather transitory and inconsequential. Our review addresses how some of the classic and contemporary approaches in attitudes and persuasion have dealt with these issues and controversies (for a historical description of related topics, see Goethals, 2007; Jones, 1985; Ross, Lepper, & Ward, 2010; Prislin & Crano, this volume).

Just as attitude theories tend to come in clusters (e.g., consistency theories, dual-process theories), individuals who study attitudes have clustered in several universities that have been especially influential in fostering basic research on attitudes and persuasion beginning in the 1950s. The first and most important of these in getting the field started was Yale University. After describing the Yale tradition, we turn to Stanford University, the University of Illinois, and finally to Ohio State University as locations in which attitude change research has thrived over an extended period of time involving multiple investigators.

Yale University

Between the First and Second World Wars there were a number of important changes in society. In these two decades nationalistic and class antagonisms intensified, economies deteriorated because of inflation, the stock-market crashed, and unemployment and poverty increased. All of this resulted in social upheaval. Static attitude measurement studies were put aside for the more urgent task of discovering ways to control and inspire social change. Instead of describing public opinion, it was time to modify it. Because of these developments along with a perceived societal need to study military indoctrination and morale for the new war, the measurement period in attitude research transitioned into a new attitude-change era (McGuire, 1999).

Thus, when the US entered the Second World War, social psychologists became engaged in questions prompted by the need to mobilize the nation for a potentially long conflict. At that time, a group of psychologists led by Carl Hovland of Yale University began to explore the influence of propaganda on attitudes and troop morale. Hovland was arguably the single person most responsible for establishing attitude change as a dominant topic in social psychology and beyond. Hovland completed his graduate studies at Yale University in 1936. Then he joined the faculty at Yale, where he remained until he passed away in 1961 at the young age of 48. For approximately 15 years, until his death, with the financial support of the Rockefeller Foundation, Hovland's "Communication and Attitude Change program" fostered research by himself and over 30 colleagues and students. In this work, Hovland and his collaborators provided some initial research on virtually every variable of interest to persuasion researchers today including those involving the source (e.g., credibility), the message (e.g., one- versus two-sided appeals; emotional versus rational appeals), the recipient (e.g., intelligence, self-esteem), and the context or modality in which the message appeared (e.g., print or verbal).

A learning approach to persuasion

During the Second World War, Hovland took a leave of absence from Yale for three years to serve in the US War Department.

Among his best known war-time studies are those on the effectiveness of one-sided versus two-sided presentations of controversial issues. Much of the work conducted during the war was summarized in the book *Experiments on Mass Communication* (Hovland, Lumsdaine, & Sheffield, 1949), and later in the classic volume *Communication and Persuasion* (1953). This research studied the paradigm, who (the message source) said what (the message) to whom (the recipient) with what effect (Lasswell, 1948). The studies conducted were largely guided by a theoretical framework adapted from the behaviorist Clark Hull, a long-time member of the Yale faculty, and the mentor of Carl Hovland. Basically, Hull developed a formulation according to which behavioral performance is a function of learning and motivation.

Hovland and his colleagues applied a variation of the Hullian framework to the study of persuasion. Their approach assumed that the same learning principles that applied to learning how to avoid touching a hot stove or memorizing one's multiplication tables were also involved in learning whether to like or dislike something new. Thus, at the simplest level, it was proposed that merely associating some object, person, or issue with something else about which one already felt positively or negatively could make the previously neutral object take on the same evaluation, the core idea of classical conditioning (e.g., Staats & Staats, 1958).

At a more complex level, Hovland attempted to apply verbal learning principles to persuasion. This approach was introduced in the first of an influential series of edited books the Yale group produced. Each volume in the Yale series focused on a particular topic and the first volume addressed the impact of the order of presentation of information on persuasion (Hovland, 1957). The core assumption of the Yale learning approach was that effective influence required a sequence of steps leading to absorption of the content of a message (e.g., exposure, attention, comprehension, learning, retention; see McGuire, 1985). Once the relevant information was learned, people were assumed to yield to it. Thus, the core aspect of persuasion was providing incentives (e.g., an attractive source) to get people to learn the material in a communication so that they would be persuaded by it.

There have been several variants of this general message learning model over the years, revealing the influential legacy of Hovland and as shown in the work of social psychologists who were originally part of the Hovland group such as Norman Anderson, Timothy Brock, and William McGuire. For example, in one important variation of the general Yale model, McGuire (1968) proposed that the many steps to persuasion initially proposed could be simplified into two: a *reception* phase (e.g., attention, learning, comprehension) and a *yielding* phase. McGuire noted that several variables studied by the Hovland group might have opposite effects on the steps involving the reception of information versus yielding to it. As an illustration, the intelligence of the message recipient is related positively to learning processes, but negatively to yielding. The joint action of reception and yielding processes implies that people of moderate intelligence should be easier to persuade than people of low or high intelligence since moderate intelligence maximizes the impact of reception and yielding on persuasion (see Rhodes & Wood, 1992, for a review).

The second book in the Yale series examined the link between personality and persuasion (Hovland & Janis, 1959). Most of the chapters in this volume focused on the ease with which a person could be convinced as a function of individual differences in age and gender, as well as differences in psychological constructs such as self-esteem, anxiety, or intelligence. In addition to these variables, a chapter by Janis and Field introduced one of the first attempts to develop a general measure of persuasibility. However, the relatively simple learning framework that guided the empirical research did not fare so well in accounting for individual differences even though some of the core ideas have survived, as will be explained shortly. In the years since this volume appeared, many individual differences variables have been linked to the ease of influence (see Briñol & Petty, 2005).

Attitude structure

In 1960, the third book in the Yale series was published with various chapters by Milton Rosenberg, William McGuire, Robert Abelson, and Jack Brehm (Hovland & Rosenberg, 1960). In this volume, focused on attitude organization and structure, they described another particularly influential idea from the Yale group—that attitudes are composed of multiple components. In perhaps the best instantiation of this notion, the *tripartite model*, attitudes were said to be based on: (a) affect or feelings, (b) cognitions or beliefs and knowledge, and (c) behaviors or actions (Breckler, 1984; Rosenberg & Hovland, 1960). The distinction between cognition, affect, and behavior has a very long history that, as McGuire (1969, 1985) has claimed, extends as far back as classical Greek and Hindu philosophers. Indeed, the trichotomy of feeling, knowing, and acting has been widely used in psychology to conceptualize general human experience, not only attitudes. Of most relevance here, the basis of the attitude object can have important implications for attitude change (Maio & Haddock, 2007). For example, it is generally more effective to change attitudes that are based (or perceived to be based; see, Petty & Fabrigar, 2008) on emotion with emotional strategies rather than with more cognitive or rational ones (Edwards, 1990; Fabrigar & Petty, 1999).

Although the basic idea of the tripartite model—that attitudes can be based on different kinds of information—is accepted today, the notion that attitudes invariably include affective, cognitive, and behavioral components is not. Rather, attitudes are better characterized as containing one or more of these elements as well as influencing them (see Zanna & Rempel, 1988). Perhaps the most widely accepted and simplest view of attitudes at present is that they consist of an object–evaluation association in memory (see Fazio, 1995; Fiske & Pavelchak, 1986).

A second theme in this volume addressed the growing interest in the field in cognitive consistency as a basis for attitude organization and change. For example, Rosenberg and Abelson (1960) presented research guided by Heider's (1958) balance theory. Furthermore, Jack Brehm, who completed his dissertation with Leon Festinger and took a first faculty position at Yale, presented work guided by cognitive dissonance theory. The inclusion of this type of work showed the theoretical flexibility of those working within the Yale program. We discuss dissonance research further in the context of our presentation of Leon Festinger and Stanford.

Social judgment theory

Following Hovland's relatively early and untimely death in 1961, the fourth and final monograph in the Yale series was published with Sherif and Hovland (1961) as editors. Sherif graduated from Columbia in 1935. After going back to Turkey he returned to the US in 1945, and joined the Yale faculty in 1947. This book represented a departure from the previous Yale books on at least two grounds. First, it highlighted a perceptual rather than a learning approach and focused on how a person judged the position advocated by the communicator—Was the position judged to fall within the person's latitude of acceptance, rejection, or non-commitment? Second, rather than the mundane topics employed in many of the previous studies in the Yale program, this volume emphasized situations dealing with more important and involving attitudes (see Petty, Cacioppo, & Haugtvedt, 1992).

The main idea of the "social judgment" approach subsequently elaborated by Muzafer Sherif and his wife Carolyn (Sherif & Sherif, 1967) was that judgments of social stimuli, such as a persuasive message, could be displaced with respect to a salient anchoring stimulus in a manner similar to the displacements observed for physical stimuli. With the person's own attitude serving as an anchor, some communications would be displaced toward one's own opinion (assimilation), whereas others would be displaced away from it (contrast). According to this view, attitude change depended on how the position recommended in the communication was classified by the recipient (Sherif & Sherif, 1967). In brief, the Sherifs proposed that increasing discrepancy within the latitude of acceptance was associated with increasing attitude change, but increasing discrepancy within the latitude of rejection was associated with decreasing attitude change. Although considerable research was collected in support of these notions as applied to the categorization of social stimuli including persuasive communications, little support emerged for the view that the judgment processes of assimilation and contrast typically preceded and were responsible for changes in attitudes (see Eiser, 1984). Nevertheless, the work of the Sherifs ultimately set off an explosion of interest in the general phenomena of assimilation and contrasts in social judgment within social psychology more generally.

Duality in early theories of persuasion

In addition to the loose themes present in the various books in the Yale series, there were several other contributions from the Yale investigators that were enduring. A particularly important theme that was evident in Hovland's reasoning and in some other theories of this period involved an underlying duality in persuasion processes. The idea of two different types of persuasion can be traced at least back to Aristotle, who highlighted a distinction between persuasion involving emotion versus reason. Furthermore, the notion of an underlying duality in judgment and behavior (e.g., acting or judging based on one's first impulse versus a more deliberative consideration) is a recurrent theme in psychology at least since Freud (see Carver, 2005, for a review). So, it is not surprising that it emerged in persuasion theory as well.

The duality in the Hovland group's work involved their distinction between persuasion based on simple augmenting or discounting cues versus persuasion based on more effortful learning of the message arguments (e.g., Kelman & Hovland, 1953). The key idea was that separate from the impact of learning the substantive arguments in a persuasive message, various simple cues (such as high- or low-credibility sources) could independently augment (or discount) the amount of influence that took place based on the message alone. These orthogonal "cue" and "argument learning" effects were thought to operate simultaneously. That is, people could learn to associate simple cues as well as more complex arguments with a message conclusion. Furthermore, the impact of each on acceptance of the message conclusion was unique, and because each type of learning was independent, each type of learning had its own forgetting curve (see also Pratkanis, Greenwald, Leippe, & Baumgardner, 1988).

The duality in this theory was primarily one of content—cues versus arguments. The same fundamental process (learning) was assumed to operate on each content, though learning simple cues would typically require less cognitive effort than learning message arguments. Nevertheless, the separation of cue learning from argument learning into independent contributors to persuasion allowed the theory to explain some novel persuasion phenomena such as how variables could affect persuasion in the absence of affecting message learning (which was not possible in the original learning theory), and how initial resistance to a message could over time turn into acceptance such as in the *sleeper effect* where people were thought to forget an initial negative cue (e.g., low-credible source) faster than strong message arguments. Over time, then, as the negative source cue was forgotten, the impact of the message could emerge.

In another influential early framework, Herbert Kelman (1958) introduced a process distinction that was tied to particular content. Kelman received his PhD from Yale in 1951, with Hovland serving as his adviser. In his multiprocess framework, Kelman distinguished between three kinds of influence: *internalization* (acceptance of the message arguments based on the source's knowledge), *identification* (going along because one

likes the message source), and *compliance* (consenting due to the source's power). In Kelman's framework, different kinds of message sources produced influence by different mechanisms (i.e., source expertise produced internalization, source attractiveness produced identification, source power produced compliance). Furthermore, Kelman proposed that the persistence of any influence varied as a function of the mechanism involved. With internalization, influence would tend to persist in the absence of the source. With identification, attitude change depended on continued liking for the source, and with compliance, persistence depended on the continued surveillance of the source.

Kelman's framework had some parallels to the earlier "cue" versus "arguments" distinction of Hovland and colleagues, but was different in that rather than being a content distinction to which the same process (learning) was applied, Kelman had three different processes that were tied to different contents. That is, some variables (source expertise) were associated with one process (internalization of arguments), but other variables (source attractiveness) were associated with another process (identification with the source). This theory was important because it suggested that not all attitude change that looks the same initially is necessarily the same in its consequences. That is, the change produced by an expert source was likely to persist even if one forgot the expert because the change was tied to the internalized acceptance of the arguments, but the change produced by an attractive source would not persist if the source was forgotten because the change was tied to identification with the source rather than acceptance of the arguments.[2] The core idea that similar initial looking degrees of influence can have different outcomes over time makes a reappearance in contemporary attitude theories in the notion of attitude strength (Petty & Krosnick, 1995), discussed later in this chapter.

Self-persuasion approaches

Another influential theme in some of the work of the Hovland group was that in addition to exposure to external messages, people could effectively change by generating their own messages. Although some research on self-persuasion was conducted in association with Hovland's Second World War studies (Hovland, et al., 1953), the persuasive effect of completely self-generated messages was shown more systematically in early Yale research on *role-playing* led by Yale faculty member Irving Janis (e.g., King & Janis, 1956; Janis & King, 1954). Janis received his doctorate from Columbia University, and became a faculty member at Yale in 1947, where he remained for the next 40 years. Although Janis was an important contributor to the first Yale persuasion book (Hovland et al., 1953), he is probably best known for his contribution to the study of group dynamics, and group thinking (Janis, 1972). With respect to attitude change, Janis played a pioneering role in the study of self-persuasion.

In a classic experiment, Janis and King (1954) asked participants to generate arguments to be delivered to another student. This role-playing resulted in more persuasion than conditions in which participants passively witnessed, or listened to the arguments generated by another student. In another early demonstration, Alan Elms, who graduated from Yale in 1965, demonstrated that individuals who generated arguments through playing a role (e.g., convincing a friend to quit smoking) were more turned off to cigarettes than those who received the same information passively (Elms, 1966). In the research on role-playing, people were typically asked to generate messages on certain topics (e.g., the dangers of smoking), and their subsequent attitudes were compared with those in a control group who had either passively listened to the communication or who had received no message. Consistently, active generation of a message was shown to be a successful strategy for producing attitude change (Huesmann, Eron, Klein, Brice, & Fischer, 1983; Watts, 1967).

Furthermore, research on role-playing showed that self-generated attitude changes tended to persist longer than changes based on passive exposure to a communication (e.g., Elms, 1966). Persuasion achieved through active generation of thoughts might be more persistent for a number of reasons. For example, argument generation might make the arguments more accessible than when they are passively received (Slamecka & Graf, 1978), and some research has shown that people find their own arguments to be more original than those generated by others (Greenwald & Albert, 1968). Consistent with the more contemporary view on attitude strength that will be described later, self-persuasion is often based on more extensive processing of attitude-relevant information than persuasion based on passive receipt of a message and that could account of the persistence finding (e.g., Janis, 1968). Although the work on self-persuasion through role-playing began in the 1950s, it was to become very important for the development of the cognitive response approach popularized at Ohio State University in the 1970s and 1980s.

Inoculation theory

One particularly influential line of research that is conceptually related to the self-persuasion work of Janis is that of William McGuire (1964) on *inoculation theory*. McGuire went to Yale in 1951 as a graduate student to work in the Hullian tradition, but Hull passed away at about that time, so McGuire ended up working with Hovland, who served as a dissertation adviser. After a postdoctoral year at the University of Minnesota with Leon Festinger, followed by faculty positions in a few different locations (Yale, Illinois, Columbia, and University of California at San Diego) for relatively brief periods, he returned to finish his career at Yale, where he served as a professor from 1970 until he retired in 1999.

McGuire's inoculation theory begins with the finding that cultural truisms such as "you should brush your teeth after every meal" tend to last forever in a vacuum, but are surprisingly susceptible to influence when challenged. McGuire noted that people have very little practice in defending these beliefs

because they have never been attacked. In his inoculation theory work, McGuire demonstrated that two kinds of bolstering can be effective in inducing resistance. One form relies on providing individuals with a supportive defense of their attitudes or having them generate supportive information (e.g., see Ross, McFarland, Conway, & Zanna, 1983). A second type of defense relies on a biological analogy. That is, McGuire suggested that just as people can be made more resistant to a disease by giving them a mild form of the germ, people could be made more resistant to discrepant messages by inoculating their initial attitudes. The inoculation treatment consists of exposing people to a few pieces of counterattitudinal information prior to the threatening communication and then showing them how to refute this information (see Rucker & Petty, 2004; Tormala & Petty, 2002). This theory built on prior work on role-playing conducted by Janis and King and was a precursor to the more general cognitive response approach that became popular in the 1970s and 1980s (e.g., see Petty, Ostrom, & Brock, 1981). In addition to his own research, McGuire is especially well known for his comprehensive reviews of the attitudes literatures in the 1968 and 1985 *Handbook(s) of Social Psychology*. He is among the most influential figures in social psychology. He passed away in 2007.

Stanford University

At about the same time that Hovland was gathering researchers at Yale to follow a general learning model of persuasion, elsewhere Leon Festinger was developing one of the most influential theories in the history of social psychology—the theory of cognitive dissonance. Festinger was a student of Kurt Lewin, one of the giants in the history of the field. Lewin, a refugee from Nazi Germany, had a great interest in doing research relevant to solving important real-world problems. While Hovland was conducting his Second World War studies on propaganda, Lewin was asked by the National Research Council to study ways of persuading women homemakers to serve animal viscera to their families (as part of the war effort). In this work, Lewin demonstrated that our own attitudes can change as a result of explaining and trying to convince others of a given point of view (see Lewin, 1943). This work was a precursor for the research just described on role-playing conducted at Yale by Janis and King.

Festinger received his PhD under Lewin's mentorship at the University of Iowa in 1942. After completing his PhD, Festinger joined Lewin and Dorwin Cartwright in establishing the Research Center for Group Dynamics at the Massachusetts Institute of Technology (MIT). After Lewin died in 1947, Festinger left to go to the University of Michigan, where he was program director for the Group Dynamics center. In 1951, he became a full professor of psychology at the University of Minnesota, and in 1955 Festinger moved to Stanford University, where he remained until 1968. It was during the Stanford years that dissonance theory thrived first as a highly controversial proposal before becoming a well-established theory. Following some dissatisfaction with the field's reception of dissonance work, Festinger departed for the New School in New York City where he generally moved away from social psychological research until he passed away in 1989.

Dissonance theory, though the most famous of Festinger's contributions to understanding attitudes, and described shortly, was not his first. In 1950, Festinger published an important theoretical paper describing how informal groups tend to produce uniformity through opinion change and rejection of people with deviant opinions from the group. Four years after that, Festinger (1954) published his well-known paper, "A Theory of Social Comparison Processes." This theory can be seen as an extension of his 1950 theory of informal social communication since it argues that people evaluate their opinions through reference to a socially defined reality. In this paper Festinger focused on the individual comparison with similar others rather than the group's need to establish opinion uniformity. Social comparison theory highlights the idea that people look to the opinions of others in order to determine if their opinions are correct.

In addition to his social comparison work, Festinger published some pioneering papers on persuasion, showing that variables such as distraction (Festinger & Maccoby, 1964), forewarning of a persuasive attempt (Allyn & Festinger, 1961), and perceptions of persuasive intent by the source (Walster & Festinger, 1962) could influence persuasion by affecting the extent of counterarguing (e.g., distraction could reduce counterarguing and thereby increase persuasion). It is notable that instead of explaining his results in terms of the learning principles dominant at the time (which would suggest that variables such as distraction would decrease persuasion by reducing comprehension and learning of the message), Festinger provided an initial interpretation that was more consistent with the message recipient as an active manipulator rather than a mere passive recipient of information. This active view was also present in his theory of cognitive dissonance and gained further traction in the cognitive response approach that emerged a few years later at Ohio State (e.g., Brock, 1967; Greenwald, 1968).

Dissonance theory

Although his early contributions were important, Festinger is best known for developing the most prominent motivational theory in the realm of attitudes if not the entire field of social psychology—the *theory of cognitive dissonance*. In Festinger's (1957) original formulation of dissonance theory, two elements in a cognitive system (e.g., a belief and an attitude; an attitude and a behavior) were said to be consonant if one followed from the other (e.g., I voted for Candidate X; She has the same positions that I do on the major issues) and dissonant if one belief implied the opposite of the other (e.g., I voted for Candidate X; His political party is opposed to mine). Festinger proposed that the psychological state of dissonance was aversive and that people would be motivated to reduce it. One of the more

interesting dissonance situations occurs when a person's behavior is brought into conflict with his or her attitudes or beliefs. For example, one common way of producing dissonance in the laboratory is by inducing a person to write an essay that is inconsistent with the person's attitude under high-choice conditions and with little incentive (e.g., Zanna & Cooper, 1974). Because behavior is usually difficult to undo, dissonance can be reduced by changing beliefs and attitudes to bring them into line with the behavior. Dissonance can result in a reanalysis of the reasons why a person engaged in a certain behavior or made a certain choice, and cause a person to rethink the merits of an attitude object. The end result of this effortful but biased cognitive activity can be a change in attitude toward the object.

One of the first published examples of dissonance was reported in the book *When Prophecy Fails* (Festinger, Riecken, & Schachter, 1956). In this book, Festinger and his collaborators reported a case study of a cult that thought the world was going to end in a massive flood before the end of 1954. When the world did not end, rather than abandoning their beliefs (as a rational view of human nature would expect), many of the group members resolved their dissonance by redoubling their efforts in getting others to join the cult. In that same year, one of the first experimental studies of dissonance was reported by Jack Brehm (1956). This paper was based on Brehm's dissertation conducted at the University of Minnesota in 1955 under the mentorship of Festinger. Brehm reported that after choosing between two similarly valued home appliances, housewives subsequently asserted that the appliance they selected was even better than they initially thought, and the rejected option was not that great after all (Brehm, 1956). The research on free choice initiated by Brehm is still generating research today (see, e.g., Schwartz, 2010). Brehm also made an important contribution to attitudes with his subsequent theory of *psychological reactance*. According to this theory, when choice is restricted, people are motivated to restore it. Thus, if people were told that they could not hold a particular attitude, they would want to hold it even more, and if they were told that they must hold a particular attitude, they would be motivated to reject it (see Brehm, 1966).

Perhaps the most famous dissonance experiment of all time was conducted as an undergraduate honors thesis at Stanford by J. Merrill Carlsmith under the direction of Festinger. In this research (Festinger & Carlsmith, 1959), Stanford undergraduates were induced to engage in the quite boring task of turning pegs on a board. Following this, some of the students were told that the experimenter's assistant was absent today and they were asked to take his place and try to convince a waiting participant that the peg-turning task was actually quite interesting and exciting. Some of these students were informed that they would be paid $1 for assuming this role, and others were told that the pay was $20. After agreeing to serve as the accomplice and talking to the waiting student, all participants reported to a psychology department secretary who gave them a presumably standard department survey that asked how interesting they found the experimental task to be. According to dissonance theory, whereas the $1 participants have insufficient justification for their behavior, the $20 participants have sufficient justification. Thus, the former participants should have experienced cognitive dissonance and showed attitude change to bring their attitudes into line with their verbal behavior. Indeed, the results of the study turned out in the way that dissonance theory expected.

Among other things, dissonance theory was rather shocking at the time because it made predictions that seemed contrary to the learning and reinforcement models that were prominent and that we reviewed earlier. Indeed, although classic figures such as Hull, Spence, Tollman, and Skinner disagreed about many issues, they all agreed on the notion that larger rewards lead to more change, and smaller rewards to less change. Festinger also reintroduced the drive state as the mechanism for change. By positing that people were motivated by what was essentially a drive, he positioned dissonance theory alongside the major learning theories in which drive reduction played a critical role (see Cooper, 2007).

While at Stanford, Festinger mentored a number of graduate students including Eliot Aronson and Judson Mills who collaborated on a classic early dissonance study showing how a severe initiation into a group can increase liking for that group (Aronson & Mills, 1959). Aronson moved to Harvard after his PhD, where he became a mentor to Carlsmith and they continued to work on dissonance processes including an important study examining dissonance in children (e.g., Aronson & Carlsmith, 1963). Aronson (1969) went on to propose a reformulation of dissonance theory in which dissonance occurred not when any two cognitions were inconsistent but when one of the cognitions involved the self-concept (e.g., I am an honest person, but I lied about the task). Aronson also extended dissonance theory to demonstrate how reminding people of hypocritical actions of theirs could lead to behavior change (e.g., Aronson, Fried, & Stone, 1991). Because dissonance theory was very controversial and contrary to learning models, other theorists aimed to explain dissonance phenomena in other ways. Next we briefly describe two of the most influential of these counterpoints to dissonance.

Self-perception theory

Just three years after Festinger left Stanford, Daryl Bem arrived there fresh from his doctoral work at Michigan and an initial position at Carnegie-Mellon University. Notably, Bem brought the first major challenge to dissonance theory, which, although couched in behaviorist language, was compatible with the attributional approaches to judgment that were growing rapidly in the 1960s and 1970s. For example, in their now classic 1962 research on emotion, Stanley Schachter (a 1959 PhD student of Festinger's) and Jerome Singer (a noted child clinical psychologist) showed that people would misattribute their felt arousal from one cause (i.e., an injection of epinephrine) to another (i.e., a happy or angry context they were experiencing), thereby enhancing their emotional experience. Attribution theory (e.g., see Heider, 1958;

Jones & Davis, 1965) was part of a general trend to characterize the human information processor as a rational inference-generating machine. Indeed, much research on information processing during this period used the computer as a reference point for human cognitive activity. Attribution theory focuses on people inferring underlying characteristics (e.g., emotions, attitudes) about themselves and others from the behaviors that they observe (both internal and external) and the perceived situational constraints that are imposed on those behaviors. In a seminal paper introducing his *self-perception theory*, Bem (1965) suggested that when people have no special knowledge of their own internal states, they simply infer their attitudes in a manner similar to that by which they infer the attitudes of others (e.g., "if I (she) walked a mile to Target, I (she) must like that store").

During much of his time at Stanford, the dissonance versus self-perception theory debate was raging as self-perception theory provided an alternative account of dissonance effects without referring to "hot" motivational factors but instead relied on "cold" cognitive inferential principles (Bem, 1972). One of the important ways in which dissonance theory was distinguished from self-perception theory was in showing that dissonance led to a state of arousal when people engaged in attitude-discrepant action. Specifically, Mark Zanna (a 1970 Yale PhD) and Joel Cooper (a 1969 Duke PhD) in a series of clever studies conducted while they were on the faculty at Princeton University demonstrated that when people could misattribute the source of their arousal to something other than their inconsistent behavior, dissonance effects disappeared (e.g., Zanna & Cooper, 1974). Subsequent research indicated that both dissonance and self-perception processes can operate, but in different domains. In particular, in a now classic study that Zanna and Cooper conducted with then graduate student Russell Fazio, the underlying "discomfort from inconsistency leading to biased processing" mechanism of dissonance theory was shown to operate when a person engaged in attitude-discrepant action that was unacceptable to the person, whereas self-perception processes were more likely to occur when a person engaged in attitude-discrepant but more agreeable behavior (Fazio, Zanna, & Cooper, 1977).

It is important to note that self-perception theory was not just an alternative to dissonance theory. Rather, it also accounted for some unique attitudinal phenomena. For example, the *overjustification effect* occurs when a person is provided with more than sufficient reward for engaging in an action that is already highly regarded. For example, overjustification would occur if a young child were induced by the promise of an ice-cream cone to attend a favorite Disney movie. To the extent that the child comes to attribute attending the movie to the ice-cream cone rather than to the intrinsic enjoyment of Disney movies, attitudes toward the movie would be less favorable than for a child who was not over-rewarded to attend the film. The overjustification effect was introduced by Mark Lepper and his colleagues (e.g., Lepper, Greene, & Nisbett, 1973; see also, Deci, 1995). Lepper graduated from Yale in 1970 and went to Stanford as his first faculty position.

Lepper also contributed to two other influential lines of research in his work at Stanford. First, in a famous study on *belief perseverance*, Ross, Lepper, and Hubbard (1975) asked experimental participants to look at suicide notes to determine which were real. Participants were told that they were right 10, 17, or 24 out of 25 times. Then they were then told that they had been lied to and asked to estimate more correctly. Those who had been told higher numbers continued to guess high, consistent with the idea that if people think carefully about the information they receive, it cannot be undermined so easily. This is a core idea in the literature on attitude strength discussed shortly. Second, in a research program on biased information processing, Lord, Ross, and Lepper (1979) asked students who were pro or against the death penalty to critically evaluate research on capital punishment. These students reported that studies supporting their pre-existing views were superior to those that contradicted them in a number of detailed and specific ways. This now well known study on biased information processing fits not only with earlier relevant work on biased perception (Asch, 1948) but also with what became a larger set of studies examining how people are motivated to defend their attitudes in the face of counterattitudinal appeals (e.g., Ditto & Lopez, 1992; Edwards & Smith, 1996; Kunda, 1990; Petty & Cacioppo, 1979).

Self-affirmation theory

With dissonance and self-perception theories each having their own domain of application, subsequent dissonance research has focused on understanding the precise cause of the tension that sometimes accompanies counterattitudinal action. For example, some theorists have questioned Festinger's view that inconsistency *per se* produces tension in people or that inconsistency reduction is the motive behind attitude change. Rather, some have argued that people must believe that they have freely chosen to bring about some foreseeable negative consequence for themselves or other people (e.g., Cooper & Fazio, 1984; Scher & Cooper, 1989). Other theorists argue that the inconsistency must involve a critical aspect of oneself or a threat to one's positive self-concept (e.g., Aronson, 1969; Greenwald & Ronis, 1978; Steele, 1988; Tesser, 1988).[3]

One particular idea relating dissonance to the self-concept was proposed by Claude Steele in his *self-affirmation theory*. Steele graduated from Ohio State University in 1971 and after positions at the Universities of Utah, Washington, and Michigan moved to Stanford in 1991. Although Steele's self-affirmation theory was proposed before he arrived at Stanford, while there he conducted numerous studies extending the theory beyond dissonance effects to other areas of persuasion. The basic idea of self-affirmation theory is that people are motivated to maintain and protect an image of self-integrity. This theory explains why people respond in such a way as to restore self-worth (e.g., changing attitudes) when their image of self-integrity is threatened (e.g., when telling the lie that a boring task is interesting). And it explains why affirming a dissonance-irrelevant aspect of

the self is effective in reducing dissonance. More generally, self-affirmation has been proposed to soften a person's resistance to any changes that might threaten the self. Relevant to persuasion, this view argues that self-affirmation can buffer the self against the threat posed by a counterattitudinal persuasive message, and thus increase the likelihood that participants will respond to the message favorably (e.g., Cohen, Aronson, & Steele, 2000). This approach has much to offer for threatening situations, and it has also been applied to understanding situations in which a message does not pose a threat to the self (e.g., Briñol, Petty, Gallardo, & DeMarree, 2007).

University of Illinois

Attitudes became such a popular topic in social psychology because of their presumed influence on people's choices and actions. That is, all else equal, people should decide to buy the product they like the most, attend the university they evaluate most favorably, and vote for the candidate they approve of most strongly. However, relatively early in the history of attitudes, the concept came under vigorous attack because several empirical studies suggested a low to non-existent relationship between self-reports of attitudes and behavior (e.g., LaPiere, 1934; see Wicker, 1969, for a pessimistic review). The attitude construct would not have lasted very long were this problem not solved in due course. In recent decades a number of different solutions have been provided. One of the most influential responses to address the attitude–behavior puzzle began at University of Illinois and came from Martin Fishbein and his graduate student, Icek Ajzen in the 1970s.

Fishbein received his PhD in 1961 from UCLA and was a professor of psychology at the University of Illinois for over 35 years (1961–1997) until he left for a position at the University of Pennsylvania. He worked in collaboration with Ajzen on attitude–behavior issues from the time that Ajzen entered the Illinois graduate program in 1967. Ajzen took a first position at the University of Massachusetts shortly after obtaining his PhD at Illinois, and continued to work with Fishbein on and off throughout his career. One solution to the attitude–behavior problem that they suggested was a methodological one based on the idea that the attitude and behavior measures should be assessed at the same level of specificity. That is, specific behaviors such as "recycling newspaper" are predicted better by specific attitudes (i.e., attitude toward recycling newspaper) than by more general attitudes (e.g., attitude toward preserving the environment; see Ajzen & Fishbein, 1977). On the other hand, general attitudes (e.g., toward environmental preservation) are better than specific ones at predicting general behavioral criteria (e.g., an index based on several behavioral opportunities such as circulating environmental petitions, recycling household waste, cleaning up the highways; see Weigel & Newman, 1976).

A second solution presented by Fishbein and Ajzen (1975) is provided by their *theory of reasoned action.* This theory was notable for highlighting social norms (what others think you should do) as an important determinant of behavior in addition to attitudes, reminiscent of the work noted earlier on this topic by Newcomb (1943) and others. In the more recent *theory of planned behavior* (Ajzen, 1991) a third factor, a person's sense of self-efficacy or competence to perform the behavior (see Ajzen & Fishbein, 2005), was added. Furthermore, another Illinois social psychologist interested in attitudes, Harry Triandis (1971), who went on to become a highly influential figure in the field of cultural psychology (Triandis, 1994), argued that it was also important to include *habits* (well-learned behavioral responses that occur without deliberative thought) in any model designed to predict future behavior (Triandis, 1977; see also Wood & Neal, 2007). In any case, these theorists make it clear that although changing attitudes can be an important first step to behavior change, it might be insufficient unless norms also favor the new behavior, people have the ability to engage in the action, and old habits do not stand in the way. The theories of reasoned action and planned behavior are among the most highly cited conceptualizations in all of social psychology and have been used widely in many applied domains. For example, another student of Fishbein's, Dolores Albarracín, has demonstrated the utility of these theories in understanding the impact of HIV-prevention communications (see Albarracín et al., 2005a). After an initial position at the University of Florida, Albarracín recently returned to Illinois to join the faculty.

Expectancy-value theory: Indirect change

The theory of reasoned action pointed to several factors important in guiding behavior as well as to attitudes themselves. Building on earlier expectancy-value frameworks, and especially the verbal learning theories of Don Dulany (e.g., Dulany, 1961, 1968), Fishbein developed a multicomponent model of attitudes. In contrast to the behavioral explanations that were still influential at the time, Dulany proposed that the subjective interpretation of individuals mediated their response to external events. The work of Dulany suggested that human behavior was mediated by controlled propositional processes, and this set the stage for Fishbein's idea that attitudes were determined by propositions as well, such as the likelihood and desirability of the consequences associated with the attitude object (see Ajzen, in press). For example, if a person has a thought such as "using this new detergent will make my clothes smell fresh," the key elements of the thought are the desirability of smelling fresh, and the likelihood that the new detergent will produce this outcome. According to this model, following exposure to a persuasive communication, the value associated with each salient object-relevant attribute is weighted by the likelihood associated with that attribute, and then the attributes are summed to form an overall evaluation. The major implication of this theory for attitude change is that a persuasive message will be effective to the extent that it produces a change in either the likelihood or the desirability component of an attribute that is linked to the attitude object (see also Johnson, Smith-McLallen, Killeya, & Levin, 2004).

Other Illinois social psychologists also proposed propositional models of attitudes. Most notable among these were William McGuire's (1960, 1981) "probabilogical" approach to attitude structure and change. McGuire, a member of the original Hovland group at Yale, published much of his probabilogical work during his time on the Illinois faculty (1958–1961). The goal of the probabilogical model was to specify how the formal laws of probability could explain, at least in part, how attitudes could be viewed as the conclusions of various beliefs or premises that people held. This model also incorporated a "hedonic" component (e.g., wishful thinking) in which the perceived likelihood of events was affected by their perceived desirability.

Another Illinois social psychologist, Robert Wyer, an influential early leader of the "social cognition" movement, demonstrated that one can change attitudes by changing the desirability or likelihood of each premise (e.g., Wyer, 1974). To the extent that the attitude has an extensive horizontal or vertical structure (McGuire, 1981), it might take change in a greater number of premises to effect noticeable changes in the target attitude. Such a view also indicates that one might produce changes in attitudes that are not even mentioned in a persuasive message if the attitudes are logically related to the claims in the message. Consistent with this possibility, research shows that a message about abortion can produce changes in people's attitudes toward the unmentioned issue of contraception (e.g., if abortion is viewed as especially bad, then avoiding abortion by using contraception might be viewed as more desirable than would otherwise be the case; see Dillehay, Insko, & Smith, 1966). This "indirect change" might even occur if the "direct change" of the targeted attitude is not evidenced.

Information integration

Regardless of whether one conceptualizes information processing as learning and retention of attitude-relevant information as in the Yale tradition, or as assessments of likelihood and desirability of attributes of the attitude object as in the Illinois theories, these information units must be integrated in some manner to form an overall attitudinal reaction. Traditionally, two combinatory rules have been examined. Fishbein and Ajzen's expectancy-value formulation described above provides one such model (i.e., summation of the likelihood desirability products for each unit of information). An alternative integration formula was provided by Norman Anderson's (1971) information integration theory. In contrast to the additive rule, Anderson posits that the pieces of information are combined by a weighted averaging process. Specifically, the person's evaluation of the salient information is weighted by the importance of the information for the judgment and is averaged with the person's weighted initial attitude to form a new attitude.

In sum, each attitude object is associated with salient information, and people either add up (Fishbein & Ajzen, 1981) or average (Anderson, 1981) this information, either deliberatively or automatically (see Betsch, Plessner, & Schallies, 2004), to arrive at their attitudes. Of course, people are sometimes rather impartial in their information-processing activity, carefully assessing whatever is presented for its merits or attempting to generate information on both sides of an issue (e.g., Kruglanski & Webster, 1996). At other times, however, people are rather biased, such as when a person tries to generate arguments to take a new job and selectively ignores information about why to keep the old job. As described in the section dedicated to Stanford, perhaps the most studied biasing motive is based on the need for cognitive consistency as evident in Festinger's theory of *cognitive dissonance*. However, other motives can also bias information processing, such as a desire to be free and independent or to belong to a group (see Briñol & Petty, 2005, for a discussion of motives relevant to attitude change).

Ohio State University

As noted earlier, the first location in which a sizeable collection of scholars were assembled to work on attitudes and persuasion at the same time was Yale University in the 1950s and 1960s, initially under the direction of Carl Hovland. Most of the work of this group focused on the study of persuasion as a function of learning processes (McGuire, 1968), but as explained earlier, other key topics studied were role-playing (e.g., Janis & King, 1954), attitude structure (e.g., the tripartite theory; Rosenberg & Hovland, 1960), and inoculation effects (McGuire, 1964). The Hovland group members eventually dispersed, with some of the original members establishing long and productive individual careers at other universities (e.g., Norman Anderson at the University of California–San Diego), some leaving for a time and then returning to Yale (e.g., William McGuire) and some successfully modeling the Hovland example of gathering other scholars to study persuasion at another institution.

Cognitive response approach

One particularly successful example of starting a new program was Timothy Brock, who received his PhD in 1960 from Yale, working with Hovland. After brief periods at the University of Pittsburgh and Iowa State, Brock went to Ohio State University in 1964, where he worked until his death in 2009. Shortly after Brock arrived at Ohio State, he brought in two other social psychologists interested in attitudes and persuasion, Anthony Greenwald and Thomas Ostrom. Brock was hired by the only social psychologist present at Ohio State at that time, Charles Kiesler, a Stanford PhD and student of Leon Festinger. Kiesler was at Ohio State for just one year and in 1964 he moved to Yale, where he published a book entitled *Attitude Change* with Barry Collins and Norman Miller. This was followed by another influential book on commitment that was published in 1971. Right after that, Kiesler became more involved in public policy and organizational behavior, serving as executive officer of the American Psychological Association, and later (from 1988 to 1990) as the founding president of the Association for Psychological Science.

Meanwhile, back at Ohio State, Greenwald, Brock, and Ostrom (1968) decided to put their university on the attitudes map by editing what was to become the first in a series of "Ohio State volumes" on attitudes. The first compendium was something of a reaction to what had become the dominant consistency theories of the time (e.g., see Abelson et al., 1968). This edited book, *Psychological Foundations of Attitudes*, contained chapters in which eminent attitudes scholars presented a core conceptual idea about persuasion, none of which was linked to cognitive consistency. For example, Ostrom and Upshaw (1968) presented a variable perspective theory that provided a new account of assimilation and contrast effects, and Brock (1968) presented his commodity theory dealing with the impact of scarcity on persuasion.

One of the most influential chapters in the volume was written by Greenwald and outlined what he called a *cognitive response approach* to attitude change (Greenwald, 1968). Greenwald, a Yale undergraduate and Harvard PhD (working with Eliot Aronson and Gordon Allport), had been working on role-playing research in the tradition made famous by Yale psychologist Irving Janis (Janis & King, 1954). Greenwald had discovered that one reason that self-generation of arguments produced more persuasion than passive exposure was that people found their own arguments to be more compelling than the arguments generated by others (Greenwald & Albert, 1968). The cognitive response idea was that all persuasion was basically self-persuasion in that external messages triggered favorable or unfavorable thoughts that were ultimately responsible for persuasion or resistance. Thus, according to this approach, persuasion occurred not so much because people learned message arguments or source cues, as emphasized by the Hovland group, but because they cognitively responded to these inputs with either favorable or unfavorable thoughts. Thus, a person might learn an argument but resist it by counterarguing (as suggested earlier by Festinger and prominently featured in McGuire's inoculation theory), or not learn an argument but succumb to it because of a favorable thought that was generated. In this framework, a variable such as source credibility might enhance persuasion by leading people to be more favorable in their cognitive reactions to the message than if the source was not mentioned or was of low credibility. The cognitive response idea harkened back to Solomon Asch (1948) who proposed that a message (e.g., "a little rebellion now and again is a good thing") from one source (Thomas Jefferson) might be interpreted in a more favorable way than exactly the same message from another source (Vladimir Lenin), and thus lead to more agreement.

As shown in role-playing research (e.g., Janis & King, 1954), whenever people engage in active construction and/or delivery of a persuasive message, it can lead to attitude change in the transmitter (see also Higgins, McCann, & Fondacaro, 1982) because people find what they generate to be convincing. The same holds true if one's thoughts are inspired by a persuasive message. In addition to affecting persuasion by influencing the *valence* (favorable or unfavorable) of thoughts that came to mind, early work on the cognitive response approach also emphasized how persuasion could be affected when variables influenced the *number* of thoughts of a particular valence that were generated. In some compelling demonstrations of this idea, Brock examined how variables such as message discrepancy (Brock, 1967) and distraction (Osterhouse & Brock, 1970) affected counterarguing. Although prior theorists had speculated about the important role of counterarguing in persuasion, Brock uniquely measured the counterarguing that occurred in response to the message under various conditions by having recipients list their thoughts. He found that when counterarguing was increased (e.g., with high message discrepancy), persuasion was reduced but that when counterarguing was disrupted (e.g., with distraction), persuasion was increased. This work inspired many subsequent studies to measure the thoughts people had in response to persuasive messages (see Cacioppo, Harkins, & Petty, 1981, for discussion of the "thought listing" technique).

The cognitive response approach became so popular that another Ohio State edited volume, *Cognitive Responses in Persuasion*, was produced summarizing various studies conducted since the original Greenwald formulation (see Petty, Ostrom, & Brock, 1981). This book was the second in the Ohio State series and was initiated when Brock and Ostrom asked then graduate student Richard Petty, who was conducting a master's thesis on cognitive responses, to pull together a list of people whose work was relevant to the cognitive response idea for an edited book on the approach. The thesis Petty was working on under the supervision of Brock and in collaboration with another Ohio State graduate student, Gary Wells, aimed to challenge a dissonance theory interpretation of distraction effects (Baron, Baron, & Miller, 1973). The dissonance interpretation was that distraction increased persuasion for counterattitudinal messages because people were motivated to justify the effort that they were exerting to attend to the disagreeable message. The cognitive response idea was that distraction disrupted the counterarguing that was occurring, thereby increasing persuasion (Osterhouse & Brock, 1970). Ironically, this cognitive response interpretation was originally proposed by dissonance theorist, Leon Festinger (Festinger & Maccoby, 1964). To tease these explanations apart, Petty, Wells, and Brock (1976) introduced what was to become an important methodological tool in persuasion research to vary the dominant valence of thinking—the manipulation of argument quality.

Petty and colleagues reasoned that if the thoughts to a message were largely unfavorable, distraction should increase persuasion by disrupting negative thoughts but that if the thoughts to the message were largely favorable, then distraction should *reduce* persuasion by disrupting positive thoughts. Dissonance would not be present in the latter situation because it makes sense to exert effort to attend to something agreeable. Thus, no effects of distraction would occur if dissonance alone was operating when a message inspired mostly favorable responses. To examine the interaction hypothesis from the

cognitive response approach, Petty and colleagues manipulated the quality of the arguments in the message along with the extent of distraction. When the arguments were strong and favorable thoughts dominated in the no-distraction condition, distraction reduced favorable thoughts and persuasion, but when the arguments were weak and unfavorable thoughts dominated, distraction had the opposite effect—reducing unfavorable thoughts and increasing persuasion over the no-distraction condition.

Following the report of this study in 1976, many other such experiments were conducted that included argument quality manipulations along with some variable of interest. These studies generally showed that many variables that were initially thought to have just one effect (i.e., either increasing or decreasing persuasion) could both increase and decrease persuasion depending on whether or not the variable was paired with a strong or weak message (see Eagly & Chaiken, 1993; Petty & Wegener, 1998, for reviews). For example, increasing personal relevance (Petty & Cacioppo, 1979) or even just the personal pronouns in a message (Burnkrant & Unnava, 1989) was found to increase message processing, thereby increasing persuasion for strong messages but decreasing persuasion for weak messages compared to low-relevance conditions. Among the variables shown to produce this interaction pattern with argument quality are: message repetition (Cacioppo & Petty, 1979b), personal accountability (Petty, Harkins, & Williams, 1980), emotion (Mackie & Worth, 1989), source credibility (Heesacker, Petty, & Cacioppo, 1983), and many others (see Petty & Wegener, 1998, for a review).

Thus, the cognitive response approach became a well-accepted framework that accounted for not only role-playing effects but also responses to traditional persuasive messages. In addition to these domains, related work showed that people can be persuaded when they try to remember past behaviors, imagine future behaviors, explain some behavior, or merely think about an event. For example, people who are asked to imagine hypothetical events come to believe that these events have a higher likelihood of occurring than before thinking about them (e.g., Anderson, 1983; Ross, Lepper, Strack, & Steinmetz, 1977; Sherman, Cialdini, Schwartzman, & Reynolds, 1985). In another important line of research, Tesser and his colleagues showed that merely thinking about an attitude object without any external information presented can lead to attitude change (see Cialdini & Petty, 1981; Tesser, 1978; Tesser, Martin, & Mendolia, 1995, for reviews).

Period of confusion

As should be apparent by now, by the late 1970s and early 1980s research on persuasion had exploded and there were a very large number of theories and effects competing for attention. The problem was that whatever effect some initial investigation showed (e.g., a likable source was more persuasive than a dislikable one), some subsequent study eventually found the opposite effect (e.g., listening to a dislikable source could increase persuasion over listening to a likable one). Furthermore, there was an explosion of theories proposing new mechanisms to account for these different effects and even for the same effects of any one variable (see Petty, 1997). For example, whereas initial theories proposed that an expert source could increase persuasion either by getting a person to learn or internalize the message arguments (Kelman, 1958) or by serving as a simple augmenting cue in the absence of argument learning (Kelman & Hovland, 1953), newer theories proposed alternative mechanisms for source expertise (e.g., high-credibility sources increase persuasion by increasing the number of favorable thoughts generated; Greenwald, 1968).

The often conflicting nature of the theories and findings caused reviewers of the attitudes literature at the time to become quite pessimistic about the field. For example, Jaspers (1978, p. 295) noted that "the most disturbing aspect of these results is their inconsistency." Sherif (1977, p. 370) referred to a "reigning confusion in the area," and Kiesler and Munson (1975, p. 443) concluded that "attitude change is not the thriving field it once was." Fishbein and Ajzen (1972, p. 532) argued that what was needed was "a rather serious reconsideration of basic assumptions and thoughtful theoretical reanalysis of problems confronting the field."

As evidence mounted that variables could produce multiple and opposite effects, and that there were also multiple processes that could underlie the same outcome, the time was ripe for new theories that could accommodate these findings. Fortunately, the 1980s saw the emergence of several such theories in social psychology generally and in the field of persuasion in particular. Two theories, the *elaboration likelihood model* (ELM; Petty & Cacioppo, 1986a) and the *heuristic-systematic model* (HSM; Chaiken, Liberman, & Eagly, 1989) articulated multiple processes by which variables could affect attitudes in different situations. What was unique about these new theories compared to the earlier duality approaches from the Yale researchers was that the new theories did not confound content and process. Recall that in Hovland's learning framework, certain variables (e.g., trustworthy sources) served as augmenting cues, whereas other variables served as message arguments. In Kelman's theory, certain variables (expert sources) induced persuasion via internalization of arguments whereas other variables (attractive sources) induced persuasion because of identification with the source. Thus, in these theories, particular content mapped onto particular processes. In the new theories, any one variable (e.g., an expert source, or one's emotions) could induce persuasion by multiple processes. We describe the two main theoretical frameworks next.

The elaboration likelihood model

The ELM grew out of a dissertation on the persistence of persuasion conducted by Richard Petty under the supervision of Timothy Brock (Petty, 1977). Following a master's thesis devoted to testing the cognitive response approach with respect to distraction (Petty, Wells, & Brock, 1976), Petty became

interested in the longstanding question of why some attitude changes endured over time whereas others did not. Following a review of the persistence literature, the dissertation proposed that it was the extent of thinking about a persuasive message that determined persistence—attitude changes that occurred with much thinking (as in the cognitive response approach) would persist because the thoughts would be memorable, but attitude changes that occurred with little thinking (such as when change was produced by a simple augmenting cue of an expert source) would be more temporary. Following the dissertation in which the two routes to persuasion idea (i.e., thoughtful vs. nonthoughtful change) was introduced, Petty, along with fellow graduate student John Cacioppo (who was mentored by Greenwald) developed a more formal theory (the ELM) designed to explain the complex findings in the attitudes field with a finite set of processes. The theory was heavily influenced by Greenwald and Brock's cognitive-response approach for the high-thought route to persuasion, as well as prior work from the Yale group on augmenting and discounting cues for the low-thought route.

Another important influence was Robert Cialdini, who spent a year as a visiting faculty member at Ohio State when Petty and Cacioppo were in their first year in graduate school. Cialdini, a 1970 University of North Carolina graduate, was a relatively new faculty member during his year at OSU and went on to become one of the most recognized and cited social psychologists studying compliance and social influence—change that occurs in a person's behavior in the absence of attitude change (e.g., see Cialdini, 2001). Petty and Cacioppo collaborated with Cialdini both independently and jointly. Of most relevance to the ELM was a set of studies Petty collaborated on with Cialdini in which the personal relevance of the communication topic was manipulated (Cialdini, Levy, Herman, Kozlowski, & Petty, 1976). This research set the paradigm for future experiments investigating the different processes that occurred when thinking was high versus low (see Petty & Briñol, in press, for more ELM history).

In a prototypical ELM study (Petty, Cacioppo, & Goldman, 1981), college students were exposed to a message containing either strong or weak arguments that were described as being developed by either an expert (Princeton Professor) or a nonexpert (high-school class) source. In addition to varying information that served as arguments and cues, the personal relevance of the message was manipulated. Some students were told that the proposal was expected to take effect in a year, thereby affecting them personally, whereas others were told that the proposal would not take effect for 10 years, making its relevance quite low. When the message was high in relevance, only the quality of the arguments affected attitudes, whereas when relevance was low, attitudes were affected only by source expertise. That is, when people were not motivated to think, they conserved their cognitive resources and relied on a relatively simple strategy for assessing the merits of the proposal.

In addition to the many situational variables (e.g., personal relevance) that were shown to affect how much thinking took place about a message and thus the route to persuasion, Cacioppo and Petty (1982) developed an individual-differences measure of the extent to which people enjoyed thinking, called the *need for cognition*. People high in need for cognition tend to form attitudes by carefully evaluating the evidence in a proposal whereas those low in need for cognition tend to rely on simple cues unless there is some incentive to process carefully (Haugtvedt & Petty, 1992; Haugtvedt, Petty, & Cacioppo, 1992). In the 25 years since the development of the need for cognition construct, the measure has been used in hundreds of studies examining persuasion processes and many others (see Cacioppo, Petty, Feinstein, & Jarvis, 1996; Petty, Briñol, Loersch, & McCaslin, 2009, for reviews).

The ELM was first published in Petty and Cacioppo's (1981) textbook on attitude change, and the most extensive early summary of research supporting the theory appeared in a 1986 monograph (Petty & Cacioppo, 1986). Both texts were written after Petty and Cacioppo graduated from Ohio State and joined the faculties at the Universities of Missouri and Iowa, respectively. In their monograph, the ELM was presented as a series of seven formal postulates (see also Petty & Cacioppo, 1986b). To deal with the complexity of the existing persuasion literature and multiple processes of persuasion, the ELM explicitly incorporated a "multiple roles" postulate. Although the theory is probably best known for its central and peripheral routes to persuasion—the idea that some persuasion processes (e.g., expectancy-value logic, cognitive response processes) operate when the likelihood of thinking is high (central route) whereas other processes (e.g., evaluative conditioning, self-perception, reliance on heuristics) operate when the likelihood of thinking is low (peripheral route)—perhaps its most powerful aspect is the specification of a small number of mechanisms by which any given variable can produce attitude change. That is, the ELM took the various processes by which variables could impact attitudes articulated in prior research and theory and organized them into a finite set, specifying when they operated. In this sense, the ELM is a metatheory.

For example, whereas Hovland distinguished between variables that served as arguments versus cues, and assumed that the two processes invariably operated simultaneously, the ELM held that it was possible for any one variable (e.g., source attractiveness, feelings of happiness) to be processed as an argument *or* as a cue depending on the person's motivation and ability to think carefully about the merits of an appeal. So, when motivation and ability to think were low, variables such as source expertise or felt happiness would be used as simple cues leading to more persuasion regardless of the other substantive information with which they were paired. As cues, variables produce an effect consistent with their valence (positive or negative). Research has pointed to numerous variables that can serve as simple cues and various specific mechanisms by which these variables (as cues) can affect attitudes. For example, low-effort mechanisms that are capable of producing attitude change with relatively little processing include evaluative conditioning, identification with the source, and misattribution of emotion to the proposal.

Notably, according to the ELM it is not the case that variables such as source expertise or emotion invariably serve as simple cues under the peripheral route. These same variables can serve in other roles when motivation and ability to think are increased. For example, when people are motivated and able to think carefully, these same simple variables can be processed as arguments and analyzed for their evidentiary value. When analyzed as evidence (rather than serving as simple cues), these variables might be good or bad for persuasion. Thus, an attractive source (which can serve as a simple positive cue under low thinking conditions leading to more favorable attitudes) would be analyzed for its relevance and cogency under high thinking conditions. Analyzed as an argument, an attractive person who was the source of information about a beauty product might be persuasive by providing visual evidence for the effectiveness of the product. If so, source attractiveness would serve as a strong argument leading to favorable thoughts. If the same attractive source were a spokesperson for a new mortgage company, however, a careful analysis would likely lead to rejection of attractiveness as a relevant or cogent consideration. The important point is that in the ELM, the same variable that is analyzed as a cue when thinking is low can serve in other roles (e.g., as an argument) when thinking is high (Petty, 1997; see also Pierro, Mannetti, Kruglanski, & Sleeth-Keppler, 2004). And, as an argument, the effect on persuasion can be the same as or different from the effect as a cue.

In addition to serving as arguments and cues, the ELM specified two additional ways in which variables can impact attitudes. These were imported and formalized from the cognitive response approach to persuasion. That is, the ELM holds that variables can influence persuasion by affecting the amount and the direction of thinking. When thinking is not constrained to be very high or low, then the same variables that can serve as cues and arguments can affect the amount of thinking. For example, people are more interested in what an expert source has to say than a nonexpert (Heesacker et al., 1983). Finally, according to the ELM, if conditions favor thinking, then variables can impart some bias to the ongoing processing. That is, when motivation and ability to think are high and people are effortfully processing a proposal, that thinking can be biased by motivational and ability variables that provide a goal to accept or reject a proposal or make it more likely that positive or negative thoughts will come to mind. For example, consistent with reactance theory (Brehm, 1956), when people are explicitly forewarned that the message has persuasive intent, they become more *motivated* to reject it in order to restore personal freedom and this is more likely if thinking is high (Petty & Cacioppo, 1979). With respect to ability, when thinking is high, being in a positive mood can increase the likelihood that positive thoughts come to mind (Petty, Schumann, Richman, & Strathman, 1993) simply because positive emotions are linked to positive content in memory (e.g., Bower, 1981).

According to the ELM, understanding these four fundamental processes by which diverse variables such as emotion and source attractiveness can produce attitude change is important for several reasons. First, it allows one to predict the direction of the persuasion effect. Second, understanding the process by which change occurs is important for understanding whether or not the attitudes formed are consequential. Research supports the ELM postulate that the more issue-relevant cognitive activity that goes into an attitude change, the more durable and impactful the attitude is (see Petty, Haugtvedt, & Smith, 1995, for a review). Finally, the specification of these distinct processes and the conditions under which they operate provides an overarching conceptual umbrella that ties together a seemingly unrelated set of variables.

The heuristic/systematic model (HSM)

Interestingly, at about the same time that Petty was developing the two routes to persuasion idea in his dissertation work at Ohio State (Petty, 1977), another graduate student dissertation at the University of Massachusetts conducted by Shelly Chaiken (1978) was also exploring the idea that persuasion could sometimes be the result of effortful thought and at other times be the result of simpler evaluation strategies. Chaiken's dissertation was supervised by Alice Eagly, a University of Michigan PhD who studied under Herbert Kelman. As was the case with Petty's dissertation, Chaiken's dissertation ideas were expanded into a more general theory, which was initially called the heuristic model (Chaiken, 1987) to emphasize the unique "decision rule" mechanism of persuasion (e.g., relying on the heuristic, "experts are correct," with little issue-relevant thinking), but was eventually named the heuristic-systematic model (Chaiken et al., 1989) to highlight the dual processes of influence. The ELM and HSM were the forerunners of what became an explosion of dual-process and dual-system theories that permeated the field (e.g., see Chaiken & Trope, 1999; Smith & DeCoster, 2000). And the ELM and HSM can each be traced back to the earlier Yale duality ideas, with the ELM being a more direct descendant of Hovland's framework via Brock, and the HSM being a more direct descendant of Kelman's framework via Eagly (Petty & Briñol, 2008).

The HSM represents another explicit attempt to explain why certain variables such as source expertise or message length have the impact that they do. That is, the HSM proposes that in contrast to "systematic" processes, many source, message, and other cues are evaluated by means of simple schemas or cognitive heuristics that people have learned on the basis of past experience and observation. To the extent that various persuasion rules of thumb, such as "experts are correct," are available in memory and accessed, they can be invoked to evaluate persuasive communications (Chaiken, 1980). According to the HSM, the likelihood of careful processing increases whenever confidence in one's attitude drops below the desired level of confidence (the "sufficiency threshold"). Whenever actual and desired confidence are equal, heuristic processing is more likely. For example, because of either prior personal experience or explicit training, people could base their acceptance of a

message on the mere number of arguments contained in it by invoking the heuristic "the more arguments, the better" (a "length implies strength" heuristic; Petty & Cacioppo, 1984; Wood, Kallgren, & Preisler, 1985). Furthermore, the HSM distinguishes an "accuracy" motive which leads to objective processing from "defensive" and "impression" motives which lead to biased processing. Although the HSM and ELM have their differences, there are far more similarities. Mostly the two theories, though developed independently, explain similar phenomena with somewhat different language (see Eagly & Chaiken, 1993; Petty & Wegener, 1999, for further discussion).

Attitude structure

At about the time that dual-process theories were gaining traction, the next book in the Ohio State series was published in 1989, edited by Anthony Pratkanis, Steven Breckler, and Anthony Greenwald. Pratkanis and Breckler were graduate students of Greenwald's and though this volume was initiated at OSU, it appeared after all three of the authors departed. Greenwald left in 1986 for the University of Washington and Pratkanis and Breckler for their first academic positions in 1984. The volume presented a series of chapters focused on attitude structure and function. In one chapter by future Ohio State faculty member Russell Fazio, an influential program of research on attitude accessibility was outlined in which attitudes were viewed as relatively simple object–evaluation links (Fazio, 1989). The speed with which an attitude came to mind was shown to relate to various important outcomes such as whether the attitude predicted behavior and whether it biased perception and information processing.

In another chapter relevant to attitude structure, Pratkanis (1989) conceptualized the belief structure of attitudes as following either a unipolar mental structure (when the person only has information about one side of an issue) or a bipolar mental structure (when the person has knowledge on both sides of an issue). A bipolar view of attitudes that conceptualizes them along a positive to negative continuum was perhaps the most common way to think of evaluation since Thurstone. Because a strict bipolar approach to attitude measurement has some difficulty in accounting for states of ambivalence (i.e., the joint occurrence of positive and negative reactions), some researchers have argued that positivity and negativity should be assessed separately (e.g., see Kaplan, 1972; see Priester & Petty, 1996, for a review of ambivalence models). Furthermore, some have suggested that positivity and negativity actually stem from separate mental systems. One influential bivariate model of attitudes was proposed by John Cacioppo shortly after he returned to the Ohio State faculty in 1989 in collaboration with another OSU faculty member, Gary Berntson (Cacioppo & Berntson, 1994; Cacioppo, Gardner, & Berntson, 1997). According to their *evaluative space model*, different motivational systems underlie positive and negative evaluation. Because of this, positivity and negativity can be activated independently, though an integrated evaluative representation often tends to occur when positivity and negativity are combined into an overall attitude.

Attitude strength

In 1987, Petty returned to the faculty at Ohio State just one year after Greenwald's departure. One year before that, Jon Krosnick had been hired as a new assistant professor after receiving his PhD at the University of Michigan. Krosnick remained on the OSU faculty until 2004, when he left for the communications department at Stanford. Petty and Krosnick had an overlapping interest in when attitudes were consequential and when they were not. Petty's interest stemmed from the elaboration likelihood model and Krosnick's was more based in a political psychology tradition where the attitudes of some voters were seen as consequential and those of others were not (e.g., Campbell, Converse, Miller, & Stokes, 1960; Converse, 1964, 1970).

At the time, there were numerous ways to explain which attitudes mattered. According to the ELM it was the extent of elaboration that was critical (Petty et al., 1995), but other researchers pointed to the importance of the attitude (Boninger, Krosnick, Berent, & Fabrigar, 1995), or its accessibility (Fazio, 1995), to how much certainty people had in the attitude (Gross, Holtz, & Miller, 1995), or how much knowledge was behind it (Wood, Rhodes, & Biek, 1995). The accumulated research on this topic was summarized in the fourth volume in the Ohio State series, *Attitude Strength: Antecedents and Consequences*, which was devoted to understanding attitude strength (Petty & Krosnick, 1995). In this edited volume, strong attitudes were defined as those that were durable (persistent and resistant) and impactful (influencing judgments and behavior; see Krosnick & Petty, 1995), and each chapter dealt with a different strength determinant.

The available evidence supported the idea that there were many different determinants of attitude strength that were not always correlated with each other. Furthermore, for virtually every seemingly objective indicator of an attitude's strength such as the actual speed with which it came to mind or the actual amount of thinking engaged in regarding an attitude, there was a parallel measure of the *perceived* ease of attitude access or extent of thought (Wegener, Downing, Krosnick, & Petty, 1995). However, there are some subjective perceptions, such as attitude certainty and importance, for which there are no objective counterparts. In an influential paper appearing shortly after the attitude strength volume was published, Bassili (1996) drew a distinction between subjective perceptions regarding one's attitudes (calling them *meta-attitudinal* indicators) and contrasted them with the more *operative* or objective indicators that tapped more directly into attitude structure or process. Bassili was rather critical of most meta-attitudinal features of attitudes, arguing that they are typically not represented with the attitude object nor closely related to the factors that determine attitudes. He argued that because people are often not

aware of the processes leading to their judgments, and because metacognition requires awareness of one's thoughts, it would be difficult for people to know about their attitudes. Despite this skepticism, the relevant research clearly indicates that at least one metacognitive indicator, the certainty or confidence with which people hold their attitudes, is associated with attitude strength consequences. In particular, attitudes held with greater certainty are more resistant to change (e.g., Kiesler, 1971), persistent in the absence of a persuasive attack (Bassili, 1996), and more predictive of behavior (Fazio & Zanna, 1978) than attitudes about which there is doubt (for a review, see Tormala & Rucker, 2007).

Initial conceptualizations of attitude certainty tended to assume that certainty sprang from structural features of attitudes such as having attitudes based on more issue-relevant knowledge, direct experience, or thought (e.g., Fazio & Zanna, 1981). And, indeed, structural factors can play an important role in determining attitude certainty. However, in the past decade there has been considerable research that has identified numerous new determinants of attitude certainty. Specifically, recent research has examined how people sometimes infer greater certainty in the absence of any structural differences. Three dissertations at Ohio State in the past decade have addressed this issue. In one, Zakary Tormala showed that people sometimes reflect on the process by which they have determined their attitudes and infer how certain they should be from this. For example, if people are led to believe that they have resisted strong arguments, they become more certain in their attitudes than if they believe the arguments they resisted were weak (Tormala & Petty, 2002). In another dissertation, Derek Rucker found that when people are thinking about a message, they become more certain if they believe that they have considered both sides of the issue rather than just one (Rucker & Petty, 2004; see also Rucker, Petty, & Briñol, 2008). In a third dissertation, Jamie Barden demonstrated that people can come to infer greater certainty in their attitudes if they are simply led to infer that they have done much thinking about the attitude object even if they have not (Barden & Petty, 2008). Of greatest importance is that each dissertation also showed that the certainty that comes from simple inferences rather than structural differences can lead the attitudes to be more consequential (e.g., resistant to change and predictive of behavior).

Flexible correction processes

The need to be accurate in one's judgments has been a prevalent motive in the history of attitudes and persuasion research. For example, as noted earlier, Festinger postulated in the 1950s that people evaluate the validity of their opinions through reference to a socially defined reality. A core postulate of the ELM is that people often process persuasive information because they want to have correct, valid attitudes. That is, one means of being correct in one's judgments is to process all relevant information as carefully as possible. However, despite one's best efforts, people sometimes have the feeling that their judgments were biased. In such situations, they can attempt to debias or correct their judgments. In a 1994 Ohio State dissertation, Duane Wegener proposed a *flexible correction model* in which people drew on their naïve theories of bias in an attempt to correct their judgments on the basis of the perceived magnitude and direction of a presumed biasing factor (Petty & Wegener, 1993; Wegener & Petty, 1995). According to this theory, to the extent that people perceive a bias but one is not operating or they correct too much or in the wrong direction for a bias, bias can be exacerbated (see also Wilson & Brekke, 1994).

It is even possible for reverse biasing effects to occur as a result of correction efforts. For example, in one persuasion-relevant study (Petty, Wegener, & White, 1998) guided by the flexible correction model, students at Ohio State University received a proposal from a likable or a dislikable source that contained either strong or weak arguments in favor of changing a personally relevant university regulation. Following receipt of the message, participants either immediately completed attitude measures or were asked not to let any biases toward the message source influence their judgments of the proposal. As expected, because the message was presented under high-thinking conditions, the simple likability manipulation had little effect when no correction instruction was given. However, when a correction instruction was given, attitudes were actually more favorable when the message was presented by a dislikable rather than a likable source, suggesting an overcorrection for the perceived biasing influence. Such explicit corrections typically require relatively high degrees of thinking. However, if certain corrections are practiced repeatedly, they can become less effortful (see Wegener & Petty, 1997; cf., Glaser & Banaji, 1999), and even automatic (see Maddux, Barden, Brewer, & Petty, 2005, for an example).

A new metacognitive process: Self-validation

A relatively recent new wave of persuasion research from Ohio State involves metacognitive processes (see Briñol & DeMarree, in press). Work on metacognition (cognition about cognition) in psychology began with a focus on perceptions of one's own memory (e.g., feeling of knowing, tip of the tongue phenomenon; Brown, 1991), and was brought into social psychology in earnest in the 1990s (see Jost, Kruglanski, & Nelson, 1998; Yzerbyt, Lories, & Dardenne, 1998). Although metacognitive processes had long been of interest in the field of attitudes as they related to attitude strength (i.e., attitude certainty) and also played an important role in correction processes as just noted, application of metacognitive ideas to attitude *change* started to become prominent in the field as a result of the pioneering work of Norbert Schwarz and colleagues, first at the University of Heidelberg and then at the University of Michigan, on *ease of retrieval* effects.

In brief, ease of retrieval effects occur when the perceived ease of generation or retrieval of information impacts judgments to a greater extent than does the content of that information. In a now classic study, Schwarz and his colleagues

(1991) asked participants to rate their own assertiveness after recalling 6 versus 12 examples of their own assertive behavior. They found that people viewed themselves as more assertive after retrieving 6 rather than 12 examples. This result was initially surprising because a straightforward application of the cognitive response ideas mentioned earlier would have suggested that people generating 12 instances of assertiveness would have judged themselves to be more assertive than those generating 6 instances. So, something besides the mere number and direction of thoughts generated must have played a role. Schwarz and colleagues reasoned that people also considered the ease with which the thoughts could be retrieved from memory (see Sanna & Lundberg, in press; Schwarz, 2004 for reviews).

Why would ease matter? One possibility suggested by Schwarz and colleagues (1991) is based on the availability heuristic (Tversky & Kahneman, 1974). That is, the easier it is to generate information in favor of something (e.g., one's own assertiveness), the more supportive information people assume there must be. Conversely, having difficulty would be associated with perceptions that there is little support available. These inferences about the amount of information available rather than the actual amount of information available could then drive judgments. According to the dual-process models reviewed earlier, this heuristic explanation makes most sense when people have relatively limited ability to think. However, more recent work has suggested that when people are engaged in thoughtful judgments, ease can affect the perceived validity of the thoughts generated. Thus, when people have an easy time generating thoughts they are more confident in them and use them more than when they have a difficult time generating them (Tormala, Petty, & Briñol, 2002; Tormala, Falces, Briñol, & Petty, 2007).

The idea that thought confidence is an important aspect of judgment is referred to as the *self-validation hypothesis* (Petty, Briñol, & Tormala, 2002). This hypothesis departs from the cognitive response approach in that the latter approach focuses on primary cognition (i.e., the number and valence of thoughts generated), whereas the former focuses on secondary cognition, or what people think of the thoughts that they have generated (Petty, Briñol, Tormala, & Wegener, 2007). The self-validation view is that generating thoughts is not sufficient for them to have an impact on judgment. Rather, one must also have confidence in them. Thoughts that are not perceived as valid are mentally discarded. The self-validation notion grew out of a dissertation by Pablo Briñol conducted at the Universidad Autonoma de Madrid under the supervision of Richard Petty and Alberto Becerra. The dissertation was aimed at pinning down the mechanism by which the effects of an earlier behavioral manipulation—head nodding (Wells & Petty, 1980)—affected attitudes. Following the dissertation that was published a few years later (Briñol & Petty, 2003), the more general self-validation framework was further developed for understanding the validating role of numerous variables including the source of persuasion, the message, the recipient, and the context of persuasion, all with the same process.

According to the self-validation mechanism, if people are generating favorable thoughts about themselves or a new proposal, they will be more persuaded if these thoughts are associated with signs of confidence such as when people are nodding their heads, or feeling happy, affirmed, or powerful. These variables instill confidence in the positive thoughts and lead people to use them more than if they are shaking their heads or feeling sad or not affirmed or powerless. However, if people are generating unfavorable thoughts (e.g., because message arguments are weak), then these same variables (e.g., nodding one's head or feeling powerful) will lead to *less* persuasion because people will have confidence in their negative thoughts and use these in forming their judgments. Thus, self-validation variables interact with the direction of one's thoughts to influence judgments. So far, research on the self-validation process has identified at least two important boundary conditions. That is, self-validation is more likely to operate when people are engaged in a relatively high amount of thinking (e.g., for important issues), and when the sense of confidence seems to follow rather than precede thought generation. The self-validation mechanism can be added to the roles for variables (e.g., cues, arguments) that are specified by the elaboration likelihood model (for a review, see Briñol & Petty, 2009).

Implicit social cognition approach to attitudes

Earlier we noted that there have been three phases of research on attitude measurement—an early phase in which the classic self-report procedures were developed, a middle phase in which various "indirect" assessment devices were introduced, and a modern phase in which various measures aiming to tap into automatic or "implicit" attitudes have thrived.[4] The third phase of work on attitude measurement began in the late 1980s, when a new category of indirect measures was developed which aimed to gauge people's *automatic* evaluative reactions—those evaluations that came to mind spontaneously upon the mere presentation of the attitude object (Fazio et al., 1986), rather than a more deliberative assessment that resulted from some reflection. There are a few key people who were instrumental in bringing the automatic revolution that had occurred within cognitive psychology to the area of attitudes.

One such person was Robert Zajonc, who published a groundbreaking paper in 1980 with the subtitle, "Preferences need no inferences" (see also, Zajonc, 1984). As this phrase suggests, the core idea was that some determinants of attitudes did not require much at all in the way of deliberative thinking. The idea of low-thought evaluation, of course, was also present in the dual-process models of attitudes mentioned earlier, but Zajonc pushed the idea even further by proposing that liking for objects could be activated automatically and even unconsciously. Zajonc received his PhD in 1955 and became a long-time member of the University of Michigan psychology department before moving to Stanford in 1994. We discuss his pioneering work on the "mere exposure" effect later in this chapter (Zajonc, 1968). At Michigan, he was instrumental in

influencing the next generation of scholars such as John Bargh who helped to make the topic of unconscious thought and behavior a dominant one in the field (e.g., see Bargh, 1994). Zajonc passed away in 2008.

Another person who was very important in bringing the topic of automaticity to the mainstream of work on attitudes was Russell Fazio. Fazio joined the faculty at Ohio State in 2001 and brought his interest in automatic processes along with him. As noted earlier, Fazio received his PhD at Princeton University in 1978, having worked initially with Joel Cooper and Mark Zanna on resolving the dissonance versus self-perception controversy in a now classic study showing that dissonance operated when the attitude-discrepant behavioral action was disagreeable but self-perception operated when behavior was more agreeable (Fazio et al., 1977). Fazio's first academic position was at Indiana University, a department that was known for research in cognitive psychology. In particular, Richard Shiffrin, an IU cognitive psychologist, produced a pair of highly influential papers with his colleague Walter Schneider the year before Fazio arrived that distinguished between automatic and controlled information processing (Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977). The automatic/controlled distinction had a broad impact on the field of attitudes as well as social psychology more generally.

Fazio explored the notion of automatic attitudes at first by examining the extent to which evaluations varied in their accessibility (see Fazio, 1989, 1995, for reviews). The work on accessibility was inspired in part by a classic study on semantic priming by Neely (1977; see also Meyer & Schvaneveldt, 1971) in which two key manipulations were examined—whether the target words were expected or unexpected, and the stimulus onset asynchrony (SOA)—the time interval from the onset of the prime stimulus to the onset of the target stimulus. Short SOAs leave participants with less time to process the prime and implement the relevant expectancies than do long SOAs. The results showed that with a long SOA, expectancies affected responses but semantic relatedness did not. This was interpreted as evidence of controlled processing. In contrast, in the short SOA condition, faster reaction times were observed when stimuli were semantically related, regardless of expectancy. This was taken as evidence of automatic processing. Fazio was also influenced by Bruner's (e.g., Bruner & Klein, 1960) classic New Look work on the importance of accessibility in perception, as well as by early social psychological work on accessibility in impression formation. For example, priming individuals with adventurous (vs. reckless) in one task causes them to rate an ambiguously described individual (Donald) in a more adventurous (vs. reckless) manner in a subsequent task (Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979).

Based on the earlier priming work in cognitive and social psychology, Fazio developed an evaluative priming measure that can be used to assess the extent to which attitudes are activated automatically on the mere presence of the attitude object (Fazio, Jackson, Dunton, & Williams, 1995). This technique examines the extent to which attitude objects selectively facilitate categorization of common words as positive or negative. The evaluative priming measure is based on a structural view of attitudes in which an attitude is assumed to consist of an object–evaluation association in memory (Fazio, Chen, McDonel, & Sherman, 1982; see also Fiske & Pavelchak, 1986). Fazio's MODE model (motivation and ability as determinants of attitude–behavior processes; Fazio & Towles-Schwen, 1999) holds that people have stored evaluative associations to many attitude objects. According to this model, automatic measures of attitudes tend to assess the "true" stored attitude (see also Dijksterhuis, Albers, & Bongers, 2009) whereas more deliberative measures tap the retrieved evaluative association along with the outcome of any downstream cognitive processes (e.g., contextual influence). Thus, if a person expresses a different attitude on a deliberative than an automatic measure, it is presumably because they have engaged in some thought that modifies the initial automatic evaluative reaction that comes to mind (see also Gawronski & Bodenhausen, 2006, for similar assumptions). This thought can reflect additional mental contents that are brought to mind or activated by the context, or it can stem from impression management or correction motives (see Olson & Fazio, 2009). The MODE model also provides a dual process account of how attitudes guide behavior. In particular, when individuals are not motivated to deliberate over a task extensively, automatic evaluations are likely to guide actions. In contrast, when individuals are motivated and able to deliberate over a task, thoughtful attitudes should be associated with behavior (Fazio & Towles-Schwen, 1999).

Another person who was critical in establishing the current popularity of the notion of automatic attitudes is Anthony Greenwald. Recall that Greenwald was a long-time member of the Ohio State faculty, during which time he developed the cognitive response approach. After being at OSU for more than 20 years he moved to the University of Washington in 1986, where he worked on such topics as subliminal persuasion (Greenwald, Spangenberg, Pratkanis, & Eskenazi, 1991) and the self (e.g., Greenwald, 1980). Perhaps his most famous contribution to attitudes was the introduction of the *implicit association test* or IAT (Greenwald, McGhee & Schwarz, 1998) as a means of assessing automatic evaluations. With the IAT, participants are asked to classify target concepts (e.g., Mary, Jack, representing the categories *male* and *female*) and attributes (e.g., love, dirt, representing the categories *good* and *bad*) by using two designated keys on a computer in which each key represents a combined category (i.e., female–good and male–bad versus female–bad and male–good). Then, an IAT score is computed by comparing participants' average response latencies to categorize the target concepts during blocks in which target and attributes are paired differently.

The IAT is most often associated with a conceptual view that holds that people can hold separate explicit (conscious, deliberative) and implicit (unconscious, automatic) attitudes that can take on different values. This view was introduced in the domain of attitudes by Greenwald and his former Ohio State PhD student, Mahzarin Banaji (see Greenwald & Banaji, 1995). Banaji graduated from OSU in 1986 and moved to the University

of Washington, and then Yale, and finally to Harvard in 2001. Greenwald and Banaji along with their students have been instrumental in examining the many implications of automatic attitudes as assessed with the IAT (see Banaji & Heiphetz, 2010, for a review). The automatic attitudes idea has been especially influential in the domain of racial prejudice. A dissertation by Ohio State student Patricia Devine in 1986 (see Devine, 1989) under the supervision of Thomas Ostrom was one of the first to make the case empirically that prejudiced attitudes were governed by both automatic and controlled processes (see also Dovidio, Evans, & Tyler, 1986; Gaertner & McLaughlin, 1983).

The idea that separate implicit and explicit attitudes can coexist was articulated very clearly in an influential review paper on "dual attitudes" by Timothy Wilson and colleagues (Wilson, Lindsey, and Schooler, 2000). Wilson, a 1977 graduate of the University of Michigan, has made fundamental contributions to the attitudes literature around the theme that people are often unaware of the reasons or causes underlying their preferences (e.g., Nisbett & Wilson, 1977). One implication of this view is that thinking about the reasons behind one's attitudes can sometimes lead people astray. For example, thinking about the reasons underlying one's attitude can cause people to underestimate the role of emotion in determining their long-term satisfaction with their options and lead them to make a choice they will regret later (e.g., Wilson & Dunn, 1986). With respect to the idea of dual attitudes, although various assumptions have been made by the different theorists who advocate this view, four assumptions are fairly common. First, implicit and explicit attitudes are sometimes assumed to be distinct mental entities that are stored separately in different areas of the brain (e.g., see DeCoster, Banner, Smith, & Semin, 2006). A second common assumption is that the two categories of attitude stem from distinct mental processes. Implicit attitudes are said to stem from associative processes such as evaluative conditioning, whereas explicit attitudes stem from propositional processes such as thinking about message arguments (e.g., Rydell, McConnell, Mackie, & Strain, 2008). Third, the different mental processes responsible for explicit and implicit attitudes are sometimes characterized as being governed by separate mental systems (e.g., reflective/impulsive; fast/slow; DeCoster et al., 2006; Rydell & McConnell, 2006). Fourth, implicit and explicit attitudes are postulated to be relatively independent and to operate in different situations. Thus, these attitudes are not expected to be in conflict with each other (DeCoster et al., 2006), but instead are postulated to work in different arenas. When considering all of these assumptions together, the dual attitudes framework suggests that attitudes assessed with automatic and deliberative measures are quite different.

The automatic attitude measures developed by Fazio and Greenwald were thought to be useful at a minimum because they might bypass social desirability concerns. Furthermore, these measures have been shown to predict spontaneous information processing, judgment, and behavior (see Gawronski & Payne, 2010; Petty, Fazio, & Briñol, 2009; Wittenbrink & Schwarz, 2007, for reviews). In contrast, deliberative attitude measures are especially important in predicting behaviors that also are undertaken with some degree of thought (e.g., Dovidio et al., 1997). Deliberative and automatic measures of attitudes are useful in predicting behavior separately (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009) and in combination (e.g., Briñol, Petty, & Wheeler, 2006b). Although the evaluative priming and IAT measures are the most widely used, other implicit measures have been developed. One measure increasing in popularity based on earlier work by Zajonc (Murphy & Zajonc, 1983) is the affect misattribution procedure (AMP). This technique was developed by Keith Payne while he was briefly on the faculty at Ohio State after graduating from Washington University and before taking a position at the University of North Carolina. To use the AMP (Payne, Cheng, Govorun, & Stewart, 2005), participants are asked to evaluate a neutral Chinese ideograph immediately following the presentation of the target of interest. The idea behind the measure is that the affect elicited by the target will be misattributed to the ideograph and influence evaluation of it automatically without the person's awareness.

The notion that researchers can measure a person's automatic evaluative reaction in addition to a more deliberative one to the same attitude object has proved to be one of the most transformative in the history of the field. In addition to the practical advantage of having measurement techniques that might bypass social desirability concerns, the development of the new automatic measures was accompanied by new ideas about the attitude concept itself. In particular, the fact that automatic and deliberative measures did not always reveal the same evaluation (e.g., one measure could reveal a positive reaction and the other a negative evaluation) led to new theories about the underlying structure of attitudes.

One of these new theories that provides an alternative way to understand the relationship between implicit and explicit measures has been generated at Ohio State by Petty and colleagues, and is called the *metacognitive model* (MCM, Petty & Briñol, 2006, Petty, Briñol, & DeMarree, 2007). The first assumption of this view is consistent with Cacioppo and Berntson's evaluative space model described earlier, according to which the positivity and negativity underlying attitudes are separable constructs (Cacioppo et al., 1997). Thus, in addition to associating attitude objects with general evaluative summaries (e.g., good/bad), people sometimes develop an attitude structure in which attitude objects are linked to both positivity and negativity separately. Furthermore, the MCM assumes that people can tag these evaluations as valid or invalid, or held with varying degrees of confidence. For many attitude objects, one evaluation is dominant and seen as valid. This evaluation would come to mind on encountering the attitude object, though the speed at which this occurs can vary (e.g., see Bargh, Chaiken, Raymond, & Hymes, 1996; Fazio et al., 1986). However, sometimes a person holds both positive and negative evaluations to be valid and this person's attitude is best described as being *explicitly ambivalent* because both positive and negative

associations come to mind and are endorsed (e.g., de Liver, van der Pligt, & Wigboldus, 2007). At other times, however, people might have two opposite accessible evaluations but one is seen as valid whereas the other is rejected. In such cases, the MCM refers to the attitude structure as one of *implicit ambivalence* (Petty, Tormala, Briñol, & Jarvis, 2006). Even though people do not endorse opposite evaluations of the same attitude object, they can nevertheless feel uncomfortable about such attitude objects even though they might not know the specific source of the conflict (see Petty & Briñol, 2009; Rydell, McConnell, & Mackie, 2008). The MCM holds that automatic evaluative associations only determine deliberative attitude measures to the extent that people endorse them. On the other hand, evaluative associations, whether endorsed or not, can affect automatic attitude measures (see also Gawronski & Bodenhausen, 2006). That is, the perceived validity tags tend not to influence automatic measures until these tags become so well learned that they are automatically activated (e.g., Maddux et al., 2005).

So much work had accumulated examining the implications of automatic attitudes that several new books on the topic were published recently. One of these, entitled *Attitudes: Insights from the New Implicit Measures* (Petty et al., 2009), became the fifth edited book in the Ohio State series. This book contains chapters from many of the prominent contributors to the burgeoning literature on automatic attitudes. Other relatively recent edited books on the topic have focused on methodological issues (Wittenbrink & Schwarz, 2007) and implicit social cognition more generally (Gawronski & Payne, 2010).

In concluding our discussion of Ohio State, we note that although the programs at Yale, Stanford, and Illinois are much less focused on attitudes than they were at one time, attitudes and persuasion remains a core topic of study at OSU. In addition to Petty and Fazio, the program has added to its faculty Duane Wegener, an OSU graduate mentioned earlier and Wil Cunningham, a Yale graduate student mentored by Mahzahrin Banaji (an Ohio State student of Greenwald's). Cunningham specializes in social neuroscience and employs brain imaging techniques to study evaluative processes. In addition, Pablo Briñol, a Professor at the Universidad Autonoma de Madrid, has held a visiting appointment at Ohio State each fall since he obtained his PhD in 1999.

A century of research in attitudes and persuasion

Now that we have presented the history of attitudes and persuasion with a focus on four key centers of theory and research that have permeated the field, we cover some of the key contributions to understanding attitudes and persuasion that are not as easily related to the major university centers we have already addressed. As noted earlier, organizing the material around decades provides an opportunity to present in a sequential order some important contributions that have not already been mentioned.

1940s–1950s

The 1940s and 1950s were a time of explosive growth in the study of attitudes and persuasion, with numerous exciting developments. One theme was that the classic psychological learning theories of the time, both behavioral and cognitive, could be applied to the study of attitudes. Similarly, theories of perception (assimilation and contrast) were used to analyze attitudes (Sherif & Hovland, 1961). And totally new theories developed exclusively by attitudes researchers were introduced (e.g., cognitive dissonance). Indeed, the first half of the contemporary period of attitude research was dominated by two widely regarded geniuses, Carl Hovland and Leon Festinger, whose contributions, students, and research styles (convergent vs. divergent) continue to influence current researchers (see McGuire, 1985, for discussion of these different styles of research). However, there were other notable contributions to attitudes that we describe next.

Classical conditioning

In addition to the verbal learning approach that guided much of Hovland's research at Yale, another influential learning approach relied more on the classic animal conditioning work of Pavlov as well as other behaviorists such as Watson. In particular, Staats and Staats (1958) conducted one of the first studies of attitude conditioning in humans. In their research, they noted that it was possible to change attitudes by directly associating positive or negative affect with previously neutral attitude objects. In brief, conditioning occurs when an initially neutral stimulus such as an unfamiliar shape (the conditioned stimulus; CS) is associated with another stimulus such as electric shock (the unconditioned stimulus; UCS) that is connected directly or through prior learning to some response such as feeling bad (the unconditioned response; UCR). By pairing the UCS with the CS many times, the CS becomes able to elicit a conditioned response (CR) that is similar to the UCR.

In the decades following the original work, a wide variety of conditioning stimuli were used to create positive or negative attitudes including unpleasant odors and temperatures, electric shocks, harsh sounds, pleasant pictures, and elating and depressing films (e.g., Gouaux, 1971; Staats, Staats, & Crawford, 1962; Stuart, Shimp, & Engle, 1987). More recently, theorists have suggested that classical conditioning applied to attitudes might actually be a somewhat different phenomenon more appropriately called *evaluative conditioning* (Martin & Levey, 1978). The reason for this is that conditioned attitudes do not follow the same properties as do the behaviors examined in typical classical conditioning paradigms (e.g., the conditioning of a salivary response in Pavlov's dogs). For example, in classical conditioning, the phenomenon works best when people (or animals) become aware of the paring of the CS and UCS so that the UCS comes to signal the appearance of the CS. In evaluative conditioning, however, this contingency awareness is not necessary. Perhaps because of this, the conditioned response in

evaluative conditioning tends not to extinguish when the UCS is no longer presented, unlike classical conditioning. Evaluative conditioning is a very active area of research currently, especially in Europe (see de Houwer, Thomas, & Baeyens, 2001; Walther & Langer, 2010, for reviews). Recent research suggests that evaluative conditioning might even be reliant on relatively simple misattribution inferences similar to the self-perception and heuristic processes that were identified in the 1970s and were described earlier (see Jones, Fazio, & Olson, 2009).

1960s

Following the frantic pace of research activity on attitude change and persuasion in the 1940s and 1950s, the 1960s was a period of reduced research output. Nevertheless, several important theoretical developments occurred, the most influential of which we have noted already such as social judgment theory (Sherif & Hovland, 1961) and inoculation theory (McGuire, 1964). Furthermore, the attributional approach was part of a general trend in the 1960s and 1970s to characterize the human information processor as a rational inference-generating machine (e.g., Jones & Davis, 1965), including self-perception theory (Bem, 1965).

In addition to the influential work of Festinger's group on cognition dissonance which was covered earlier, it is important to recognize another influential social psychologist, Fritz Heider. Heider came to the US from Germany in the early 1930s, and moved to the University of Kansas in 1947. In contrast to dissonance theory, the *balance theory* developed by Heider (1958) holds that inconsistency pressures sometimes lead to attitude change by a simple inference process rather than because of an extensive reanalysis of the merits of the attitude object. In particular, the theory holds that balance occurs when people agree with people they like, or disagree with people that they dislike. This theory can account for why a person would come to like a candidate more after he or she is endorsed by a favored celebrity. The theory holds that imbalance (e.g., disagreeing with someone you like) leads to attitude change toward the candidate (or the endorser) in the direction of balance (see Insko, 1984 for an extended discussion). A related formulation, congruity theory, holds that attitudes toward *both* source and object change to restore "congruity" (Osgood & Tannenbaum, 1955). Thus, although dissonance was the most popular, it was not the only consistency theory around. By the late 1960s, the consistency idea had become so pervasive that a number of prominent researchers (Abelson et al., 1968) published an edited volume with over 80 essays devoted to various positions taken by the numerous scholars actively working in the area. The need for consistency remains a critical part of social psychological approaches to judgment both within and outside of the attitudes domain (e.g., Gawronski & Strack, in press; Guadagno & Cialdini, 2010; North & Swann, 2009).

1970s

Work on attitude change in the 1970s continued a very cognitive approach but, in contrast to some of the work in the 1960s which highlighted simple inference processes, the work in the 1970s tended to emphasize effortful thinking processes and how thoughts and beliefs were integrated to form an overall summary evaluative judgment. As described earlier, the work on cognitive responses conducted at Ohio State and the work on expectancy-value approaches conducted at Illinois were dominating the field of attitudes and persuasion at the time. However, not all the theories were emphasizing high-thinking processes.

Mere exposure

The research on self-perception by Bem (1972) mentioned earlier, for instance, suggested that attitude change can occur with relatively little (if any) effortful thinking based on simple rational inferences.

Another research program emphasizing simple association processes was conducted under the label of the *mere exposure* effect. This effect refers to a phenomenon whereby attitudes toward stimuli become more favorable as a consequence of simple repeated exposure to those stimuli without any need to pair the stimuli with other positive stimuli as in evaluative conditioning. The person who first reported careful experiments on this effect was Robert Zajonc (1968), who as we noted earlier was instrumental in bringing the idea of automatic attitudes to the forefront of the field.

An early explanation of the mere exposure effect was provided by Edward Titchener (1910), who proposed that familiar objects led people to experience a glow of warmth, and a sense of ownership and intimacy. Edward Titchener was a British psychologist who studied under Wilhelm Wundt. After completing his doctoral program in Europe he went to take a position as a professor at Cornell University where he created the largest doctoral program in the US at the beginning of the 20th century and where he taught his views of the structure of the mind (structuralism).

Work on the mere exposure phenomenon over the years has shown that simple repetition of objects can lead to more positive evaluations even when people do not consciously recognize that the objects are familiar. In one representative study, Kunst-Wilson and Zajonc (1980) presented people with a series of polygon images and found that even when these images could not be consciously recognized, the more often they had been presented, the more they were liked. In addition to polygon images, this effect has been demonstrated with a wide variety of stimuli such as foreign words, photographs, music, ideographs, and nonsense syllables (see Bornstein, 1989, for a review). Moreover, it has been shown that mere exposure can affect mood, and that this mood can spread to other, related stimuli that were not even presented (Monahan, Murphy, & Zajonc, 2000).

Perhaps the most accepted explanation of this effect today relies on the notion of *perceptual fluency*. A great deal of research suggests that previous or repeated exposure to stimuli can make those stimuli easier to process, and that this fluency enhances subsequent liking. Specifically, the feeling of ease of

processing is thought to be misattributed to a positive evaluation of the stimulus (Bornstein, 1989; Bornstein & D'Agostino, 1992; Jacoby, Kelley, Brown, & Jasechko, 1989), at least when people perceive fluency as something good (Briñol, Petty, & Tormala, 2006a). Thus, like evaluative conditioning effects, research suggests that mere exposure effects might be dependent on relatively simple misattribution inferences.

In addition to the work on mere exposure, the feeling of fluency has received a great deal of attention in subsequent work on *ease of retrieval* effects (Schwarz et al., 1991) that we mentioned earlier as well as in research on *regulatory fit* (Higgins, 2000). In the latter paradigm, Tory Higgins, currently at Columbia University, and his colleagues have shown that when a persuasive message is matched to a person's regulatory style (i.e., an eager means of attainment with promotion focus or a vigilant means with prevention focus), the individual might come to accept the message position simply because the message "feels right" (Cesario, Grant, & Higgins, 2004) or is easier to process (e.g., Lee & Aaker, 2004; see Petty, Wheeler, & Bizer, 2000, and Briñol & Petty, 2006, for discussions of other "matching" effects in persuasion).

1980s

As we noted earlier, in the 30 years from the 1950s through the 1970s, so many new theories of persuasion and so many effects were uncovered that conflicted with each other that this caused some reviewers of the attitudes literature in the mid to late 1970s to be quite pessimistic about the field. The ELM (Petty & Cacioppo, 1986a) and the HSM (Chaiken et al., 1989) described earlier emerged to account for this apparent confusion by articulating multiple processes by which variables could affect attitudes in different situations. In addition to those developments, it is worth noting one additional contribution that began in isolation from the mainstream of attitudes research, but has been more recently incorporated into it. This research concerns the impact of numerical minorities on persuasion. Although the mainstream of work on attitude change in the US had focused on the power of majority influence (i.e., conformity) going back to the classic studies of Sherif and Asch, Serge Moscovici's studies in France demonstrated that numerical minorities could sometimes be more impactful than majorities, at least at a private or indirect level (Moscovici, Mucchi-Faina, & Maass, 1994).

In particular, Moscovici's *conversion theory* (1980) proposed that a majority source was mostly influential on a public or direct level because individuals desired to belong to the majority group. Since the goal is to attain majority group membership, and to avoid being categorized as a deviant minority, people are motivated to accept the majority position in public. More interestingly, Moscovici proposed that minority sources could be persuasive at an indirect or private level. In his view, this was because people resisted directly identifying with minorities but nevertheless thought carefully about the position the minority advocated. Because of the enhanced thought minority messages received, attitudes would sometimes change to minority sources on issues related to the focal topic if not the focal topic itself (e.g., change would occur on birth control if the topic was abortion; e.g., Crano & Chen, 1998). In the language of multiprocess theories such as the ELM and HSM, Moscovici's idea was that majorities serve as simple cues and thus the change they produce is somewhat ephemeral. On the other hand, minorities induce careful processing and thus changes that they produce can be more enduring and percolate throughout the cognitive system.

In the years since Moscovici's pioneering analysis of minority influence, there has been an outpouring of interest in the topic initially in Europe and then worldwide, and numerous mechanisms by which majority and minority sources can affect attitudes have been identified (e.g., Mugny & Pérez, 1991). Notably, in accord with contemporary multiprocess theories of persuasion, the majority or minority status of the message source has been shown to serve in different roles depending on the overall likelihood of thinking (for a recent review see Martin & Hewstone, 2008). Recent developments on this phenomenon have revealed that sources in the numerical majority (vs. minority) can influence persuasion not only by serving as simple cues or affecting the direction and the amount of thinking (Tormala, Petty, & DeSensi, 2010), but also by influencing the confidence with which people hold their thoughts in response to the persuasive message (Horcajo, Petty, & Briñol, 2010b; see Prislin & Crano, this volume, for more on the history of social influence research).

1990s

The 1990s continued the progress that had been made in the 1980s, and the field of attitudes and persuasion began to thrive again. Two notable books that were published were Eagly and Chaiken's (1993) *Psychology of Attitudes*, which provided the first completely comprehensive review of the field, and Petty and Krosnick's (1995) edited volume on *Attitude Strength*, which summarized the literature on when attitudes would be consequential and when they would not. As noted earlier, after a decade of research providing evidence for the ELM and HSM idea that the mechanism of persuasion could be different under high- and low-thinking conditions, a new wave of research examined the consequences of attitudes changed by these conditions. In general, when attitudes are based on relatively high amounts of thinking they are more likely to persist and resist change as well as guide behavior. Also, as introduced earlier, strong attitudes tend to come to mind more quickly, and are rated as more certain and important. Subsequent research on *metacognition* (e.g., Jost et al., 1998; Petty et al., 2007) has revealed that attitude certainty and other subjective perceptions associated with attitudes play a critical role in determining the use of attitudes.

2000s

At the dawn of the current century, the field of attitudes and persuasion was thriving. Not only had some longstanding issues

in the field been resolved, such as how common persuasion variables such as source credibility could produce opposite effects and whether attitude changes would persist over time and guide behavior, but new kinds of processes were invigorating research. We have already mentioned metacognitive phenomena, for which research began in earnest in the 1990s and continues today. In addition, we noted the enormous interest in automatic processes. This topic was especially prominent among researchers interested in prejudice, but extended to more diverse topics such as consumer and health attitudes. Interestingly, these two new areas focused on the highest amounts of thought (thoughts about thoughts) and the lowest amounts of thought (automatic reactions) relevant to evaluations. Furthermore, as might be expected from a thriving field, the early part of the century brought a plethora of new books documenting the progress that had been made. Notably, the field produced its first "Handbook" of attitudes (Albarracín et al., 2005b), and a number of new textbooks and compendiums (e.g., Bohner & Wanke, 2002; Crano & Prislin, 2008; Forgas, Cooper, & Crano, 2010; Maio & Haddock, 2010), as well as the fifth volume in the Ohio State series, which focused on implicit measures of attitudes (Petty, Fazio, & Briñol, 2009). Importantly, implicit measures not only influenced how researchers thought about attitude representation (as noted earlier in this chapter), but also about attitude change, as we describe next.

Change in implicit attitudes

After a long tradition of assessing the impact of persuasion treatments on attitudes using people's responses to self-report measures, more recent work has also assessed attitude change with measures that tap into people's more automatic or gut-level evaluations. Early assumptions about the nature of automatic evaluations suggested that such attitudes would be very difficult to change, in part because the underlying object–evaluation associations were assumed to be learned over a long period of time (e.g., Banaji, 2004; Bargh, 1999; Greenwald, et al., 1998, Wilson, et al., 2000). In accord with this view, a first wave of research was generally consistent with the idea that automatic measures of attitudes were somewhat difficult to change but could be influenced by relatively low thought and automatic attitude change processes that unfolded over time such as evaluative conditioning (e.g., Rydell & McConnell, 2006; for reviews, see, Blair, 2002; Fazio & Olson, 2003; Gawronski & Bodenhausen, 2006).

Against these early assumptions, further research demonstrated that automatic evaluations are sensitive not only to low-thinking processes but also to more deliberative thinking and that they can change rather quickly. For example, Blair, Ma, and Lenton (2001) found that, compared to controls, participants who were asked to think about and visualize counter-stereotypical women showed reduced levels of implicit gender stereotyping. Similarly, Sassenberg and Wieber (2005) found that asking individuals to think about a situation when they were happy with their ingroup increased the evaluation of that group on an implicit measure relative to thinking about situations when they were angry with their ingroup. Taken together with previous research on traditional, explicit persuasion, these findings suggest that the direction of the thoughts that come to mind in response to a treatment can influence both deliberative and automatic measures of attitudes similarly. Subsequent research has shown that not only can self-generated thoughts influence both deliberative and automatic attitudes, but so too can thoughts generated in response to persuasive messages influence both types of measure (see Briñol, Petty, McCaslin, 2009; Petty & Briñol, 2010, for reviews on implicit persuasion). For example, recent research has shown that automatic evaluations of vegetables became more favorable after people thought about a health advertisement composed of compelling arguments in favor of vegetables versus a control persuasive message (Horcajo, Briñol, & Petty, 2010a; see also Maio, Haddock, Watt, & Hewstone, 2009). And, when changes in automatic attitudes are the result of a high degree of thought, changes in one attitude can produce changes in related attitudes (e.g., changes in automatic attitudes toward the color green can lead to changes in automatic attitudes toward consumer products associated with green; see Horcajo et al., 2010a).

Although considerable research has demonstrated that extensive thinking enhances the strength of explicit attitudes, rendering them more consequential, there is less research addressing how consequential automatic attitudes are and whether extensive thinking enhances the strength of these attitudes as well. At first, research seemed to suggest that automatic attitudes were primarily influential when behavior was undertaken with little thought, whereas deliberative attitudes were more consequential when behavior was deliberative (e.g., Dovidio et al., 1997; see Fazio & Olson, 2003, for a review). That is, automatic and deliberative attitudes appeared to operate in different domains. However, subsequent research has shown that both automatic and deliberative attitudes can predict behavior in the same domain, with automatic attitude measures adding to the prediction of behavior above and beyond that of deliberative attitude measures (e.g., Houben & Wiers, 2008; Vargas, von Hippel, & Petty, 2004; see Greenwald et al., 2009). That is, behavior can be jointly determined by automatic and deliberative components. Furthermore, just as high thinking can strengthen attitudes at the explicit level by increasing attitude confidence, so too does high thinking lead to strength at the automatic level by making attitudes more accessible.

Dual-system models

The venerable dual-process theories that have guided work on attitudes and social cognition for the past few decades (such as the ELM and the HSM; for a review, see Chaiken & Trope, 1999) have been challenged recently on one hand by those who claim that there is really only one fundamental process of judgment (Kruglanski, Erb, Pierro, & Spiegel, 2003; described in the next section), and on the other hand by advocates of newer

dual-systems approaches (e.g., Deutsch & Strack, 2006; Kahneman, 2003; Lieberman, 2003) that try to subsume the earlier dual-process frameworks. The dual-system theories have much in common with the earlier dual-process models in that there is typically an emphasis on controlled judgments that are made deliberatively with more thought, versus more automatically with little thought (cf., Schneider & Shiffrin, 1977). The relatively automatic system has been referred to as the emotional system (Zajonc & Markus, 1982), impulsive system (Deutsch & Strack, 2006), intuitive system (Epstein, 2003), implicit system (Greenwald & Banaji, 1995), slow-learning system (Smith & DeCoster, 2000), or, more blandly, as System I (Kahneman, 2003) or System X (Lieberman, 2003). These systems are in contrast to the cognitive, reflective, rational, explicit, fast-learning Systems II and C (see Carver, 2005, for a review).

Briefly described, there are a number of specific predictions that have been made from a dual-systems approach such as (1) if dual systems exist, different measures that tap into these systems should predict different behaviors, or (2) if dual systems are in operation one can see different areas of the brain activated, or (3) if dual systems exist there will sometimes be conflict between the outputs of the systems, and so forth. Although research on these questions continues, at present it is not clear that the new systems approaches go beyond the earlier dual-process and multiprocess models in accounting for how particular variables impact attitude change (see Petty & Briñol, 2006). That is, people can use any content input (one's attitude, one's emotions, a credible source, and so forth) in an intuitive/impulsive way (e.g., liking a message in a relatively effortless way if the position agrees with your attitude, if you feel happy, or if the source is credible), or the same variable can serve as input to a more deliberative/reflective process (e.g., having more confidence in and using your generated thoughts if they agree with your attitude, if you are happy, or if the source is credible). Thus, newer models of implicit attitude change that recognize the interrelationships between implicit and explicit measures of attitudes hold much promise in our view. Examples of these include the metacognitive model described earlier and the associative–propositional–evaluation (APE) model of Bertram Gawronski and Galen Bodenhausen (2006). These frameworks help to explain how different persuasion treatments can produce changes in either automatic or deliberative attitudes that can occur in isolation or spill over and influence the other.

Unimodel

In a critique of the ELM, the HSM, and other dual-process and system theories more generally, Arie Kruglanski and colleagues in a series of papers (e.g., Kruglanski et al., 2003; Kruglanski, Erb, Pierro, Manetti, & Chun, 2006; Kruglanski & Thompson, 1999) presented a comprehensive and integrative *unimodel* that postulates that one underlying process is sufficient to account for social judgment. Kruglanski graduated from UCLA in 1968, and was hired initially at Tel-Aviv University (Israel). After appointments at various universities such as Wisconsin and all over the world, Kruglanski joined the faculty at University of Maryland in 1986, where he has been ever since. Although Kruglanski has made numerous important contributions to social psychology such as his theory of lay epistemics (Kruglanski, 1989) and to the understanding of attitudes such as the role of need for closure (Kruglanski & Webster, 1996), his most directly relevant and impactful view of attitudes comes from his unimodel of judgment. The goal of this theory was to present a model of attitudes and judgment that relied on just one key underlying process in which people engaged in "if–then" reasoning that could be applied to any mental contents (e.g., simple cues or complex arguments).

In presenting this theory as an alternative to dual-process theories such as the ELM and HSM, Kruglanski and colleagues correctly noted that many of the early studies testing dual-process notions compared the impact of relatively simple cues (e.g., source expertise) described briefly with more complex verbal arguments (e.g., nine consequences of adopting a recommendation, each presented in a separate paragraph). This fact led them to suggest that perhaps there was only one mechanism of persuasion that operated and it only appeared as if there were two separate processes because two separate kinds of content were available to process. The problem, as they saw it, was that evidence for dual processes came from studies in which the central/systematic route (or high-effort processing) resulted from the impact of complex message factors, and the peripheral/heuristic route (or low-effort processing) resulted from the impact of simple source and other nonmessage factors such as one's mood.

However, in a series of papers, Petty and colleagues argued that it was not the case that all dual-process studies suffer from this confound (e.g., Petty & Briñol, 2006; Petty, Wheeler, & Bizer, 1999). For example, although some ELM research has manipulated simple source versus complex message variables to study high- versus low-effort attitude change (e.g., Petty et al., 1981), other ELM research has presented only complex message information (e.g., three versus nine weak arguments) to show how it could be processed simply as a peripheral cue or effortfully for merit leading to different outcomes. When processed with little effort, nine weak arguments lead to more persuasion than three because the arguments are subject to a "more is better" heuristic, but when processed carefully for merit, nine weak arguments leads to less persuasion than three because of all of the unfavorable thoughts generated (e.g., Petty & Cacioppo, 1984). Furthermore, some research has manipulated very easy-to-process source factors (e.g., attractiveness) and pointed to their evaluation as an argument in high-effort attitude change where they either add to or subtract from persuasion depending on their relevance to the issue, whereas under low thinking conditions, attractiveness is always good for persuasion. A similar critique of the unimodel was presented by advocates of the HSM (see Chen, Duckworth, & Chaiken, 1999). Notably, the ELM does not dispute that rule-based

reasoning can be involved in many judgments or that an "if–then" reasoning (either explicit or implicit) can be a final step prior to rendering a judgment (Petty & Briñol, 2006). However, even if a similar rule-based step occurs just prior to a judgment, it is still possible for different processes to precede that final step and distinguishing among these processes can be very useful. Ultimately, we suspect that preference for single-process or multiprocess models will depend more on one's theoretical style (lumper or splitter) than on any currently available research evidence.

Summary and future avenues

The history of research on attitudes and persuasion may hold general lessons for the field of social psychology more generally and for any research enterprise. Through the decades there have been a number of recurrent issues that are likely to emerge in the future in new forms. In closing, we briefly summarize some of these often controversial themes in the history of attitude change research, and some issues relevant to consider for future decades.

From apparently confusing effects to moderating conditions for effects and processes

It is now clear that any given variable (e.g., source credibility, recipient's mood) can produce different (even opposite) effects. As noted earlier, the presence of many opposite effects in the attitude change domain led some investigators in the 1970s to bemoan the reigning confusion. These documented opposite effects for many variables contributed to the crisis in social psychology and to the disillusionment with attitudes in particular. It *is* confusing when a variable that seems as simple as distraction or a positive mood is shown to both increase and decrease persuasion.

However, the history of attitude change research has taught us that if we are interested in the effects of any variable, it is probably simplistic to stop with the first-generation question of whether the variable increases or decreases some outcome. It is likely that sometimes the variable increases and sometimes it decreases the outcome. The research enterprise is a quest to determine and understand when each effect occurs (i.e., one variable can have multiple effects, though these different effects can sometimes be a product of just one process such as when a variable affects the amount of thinking that takes place). The idea of multiple effects for single variables in different contexts is very consistent with McGuire's (1983) contextualist framework for social psychology.

Once researchers discover some effect of a variable and when this effect occurs, debate typically centers on the process that is responsible for the outcome. The single-process assumption is that there is just one true process that is responsible for each effect. Considerable research often centers on collecting evidence for one particular process (e.g., dissonance or self-perception). Eventually, the field tends to recognize that each process could produce the same outcome, but in different circumstances, leading to a search for moderating conditions (moderated mediation; Muller, Judd, & Yzerbyt, 2005). The history of attitude change research indicates that as conflicting data began to accumulate, researchers came to recognize that the initial single-effect and single-process assumptions were not viable and that any given persuasion variable could produce multiple effects and induce multiple processes. This led to early ideas about a duality in persuasion (e.g., cues vs. arguments or internalization vs. identification) that were elaborated and extended in later decades.

From antecedents to consequences of processes

It is clear why people want to know about the persuasion effects of variables (i.e., to sell more diet soda or elect particular candidates), but why do we care about the processes leading to the effects? Understanding processes by which variables can produce persuasion is important for a number of reasons. First, if any one variable can affect attitudes by different processes, then different persuasion outcomes for the same variable are possible. For example, when thinking is constrained to be low, a happy state might lead to more persuasion than a sad state because emotion serves as a simple cue, but when thinking is unconstrained, a happy state might reduce processing of the strong arguments in a message compared to a sad state, thereby reducing persuasion.

Second, even if two different processes result in the same extent of persuasion, the consequences of this persuasion can differ. For example, the ELM holds that the process by which an attitude is formed or changed is consequential for the strength of the attitude. As an illustration, when variables such as emotion produce persuasion through low-thinking processes (e.g., serving as a cue) the attitudes formed are less persistent, resistant to change, and predictive of behavior than when the same amount of change is produced by these variables via high-thinking processes (e.g., biasing the thoughts generated). Thus, understanding the processes by which variables have their impact is important because it is informative about the immediate and long-term consequences of persuasion (Petty et al., 1995).

From one process to too many processes to a finite set of processes

Finally, we noted that throughout the history of persuasion research, many specific processes were uncovered. This wealth of ideas led to confusion and to attempts to simplify the number of mechanisms. For example, the ELM specified a relatively small number of processes that subsume the many. And the unimodel went to the ultimate extreme in linking all processes to just one. In the 1990s, a new wave of research focused on metacognitive processes that can be important to the success of persuasive messages. That is, just as some previous research has articulated the low- versus high-thinking primary cognition

processes that contribute to attitudes and judgments, some more recent research is focusing on people who are thinking about their thoughts (secondary cognition). The history of persuasion has shown that it is useful to distinguish first between high- and low-thinking processes, and later between processes of primary and secondary cognition. An open question is whether a next generation of research will find it useful to examine third-level cognition (i.e., thoughts about metacognition; Wagner, Briñol, & Petty, in press).

From single measures to multiple measures

Another recurrent question in the history of the field is what kind of measures and how many measures are needed to explain attitudes and persuasion. As noted earlier, the impact of persuasion treatments on attitudes first used deliberative measures, whereas now attitude change is also sometimes assessed with measures of automatic attitudes. Interestingly, when people are subjected to an attitude change manipulation, sometimes attitudes appear to change more on deliberative than on automatic measures (e.g., Gregg, Seibt, & Banaji, 2006), sometimes they appear to change more on automatic than on deliberative measures (e.g., Karpinski & Hilton, 2001), sometimes the measures are affected differently by different aspects of the persuasion treatment (DeCoster et al., 2006; Rydell & McConnell, 2006), and sometimes the measures are influenced in a similar manner by the manipulation (see Gawronski & Bodenhausen, 2006, for a comprehensive review). Over the next decade new research on the nature of attitudes inspired by the newer implicit measures will surely prove enlightening. Future research is likely to continue to explore this topic as well as to take advantage of new technological advances to understand attitudes. One area that is likely to see an exponential increase in interest concerns how attitudinal processes can be mapped with new brain imaging techniques (e.g., see Cunningham, Packer, Kesek, & Van Bavel, 2009). Such measures are likely to add to our knowledge of attitudes just as prior measurement techniques have each led to substantial progress in the field.

Notes

1. Numerous other functions for attitudes were also proposed, such as expressing one's values or defending the self from unpleasant truths (Katz, 1960; Smith, Bruner, & White, 1956; see Maio & Olson, 2000, for a more contemporary treatment).
2. Note that the Kelman and Hovland (1953) and Kelman (1958) theories were inconsistent with each other. Whereas Kelman and Hovland (1953) argued that expert sources served as simple cues that were *not* tied to argument learning, Kelman (1958) held that experts did produce attitude change by inducing learning and acceptance of message arguments (more in line with the original Hovland et al., 1953 learning model). As discussed shortly, subsequent persuasion theories such as the elaboration likelihood model resolved this by holding that any one variable such as source expertise could work in different ways in different situations (e.g., Petty & Cacioppo, 1986).
3. There are still other approaches to understanding dissonance for readers to consider (e.g., the *self-standards model*; Stone & Cooper, 2001; the *action-based model*; Harmon-Jones & Harmon-Jones, 2008; see Cooper, 2007; Harmon-Jones & Mills, 1999, for reviews).
4. Although the implicit–explicit distinction has become very popular recently, it actually has been around in one form or another for a long time. For example, in their classic treatise on persuasion, Hovland, Janis, and Kelley (1953) defined attitudes as "implicit responses" that were "sometimes unconscious" and were "oriented toward approaching or avoiding a given object" (p. 7). Attitudes were contrasted with "opinions," which were "verbal answers that one covertly expresses to [oneself]" (p. 8). These private opinions were further distinguished from public opinions that could be susceptible to social desirability motives.

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